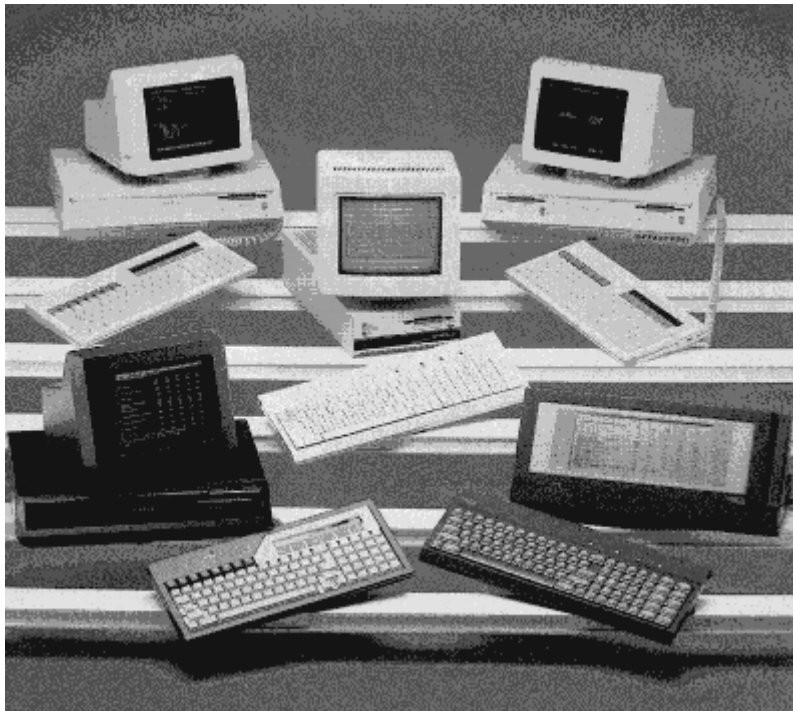# Apricot Technical Bulletin No. 26

New Items of Note in this Bulletin Update.

* What the 386 Error Beep Sequence checks

* How to add an External 5 $\frac{1}{4}$ inch disk drive

* How to add a TS150/5 External tape drive (Wangtek)

* What Co-processor to use on what machine

* Formatting the Winchester on a new machine

* Qi ROM Bios Release history from 1.01.01 to 1.02.06

* Latest release of the Qi Security Processor

* How to disable On-Board Ethernet on the Qi

* AEMM386.SYS and SECURITY.SYS on the Qi

* Qi 300 Range and Performance

* Reading Disks on Xen-S machines

* Adding an AMCard to a XEN-S

* Splitter Cable for the Qi Synchronous port to give you 3 serial ports!

* NEW Xen-i 286 machines and extra memory

* Windows 386 and expanded memory

* New releases of ROM Bios

* Internal 40MByte Tape Drive jumper settings

* MS-DOS and baud rates revealed

* Apricot's DTC (Desk Top Communications) package Overview

* Current release version numbers for Network software

* VX-NET 3.11 and 3.1 Overviews

Technical Bulletin No. 26

Upgrade Instructions

Please note that this bulletin is a series of replacement pages which you should insert into your existing bulletin. As you insert the new pages, please keep the following points in mind:

* Some pages which are unchanged from the previous bulletin may be included in this bulletin. This is true only when the overleaf page has altered in some way.

* The vertical line in the margin indicates information which is new or has been revised since the *last* issue of the bulletin.

* You can easily recognize which pages are from a particular bulletin by observing the header at the top of the page.

* We strongly recommend you read **all** the items marked with a vertical line in the margin.

* You may copy this document as many times you wish for circulation within your company. Do not circulate to end users.

Please integrate the pages of this bulletin according to the instruction sheet on the following page.

After you have inserted all the pages, file the instruction sheet just behind the front cover of the bulletin. You will then have a record of the update to the bulletin.

Back Issues of Technical Bulletins.

Please note that seperate back issues of any particular bulletin can no longer be supplied as copies are exhausted. Complete, updated manuals, inclusive of binder, will be a product available from Technical Support for dealers wi h a Support Co tract. New Systems Centres (previously dealing with Apricot Direct or another distributor) will be supplied with one copy of this manual free of charge. If you are a dealer with a Support Contract and you currently receive these bulletins on a regular basis but where you mislay or lose a specific update, the complete manual can be ordered from Colin Davis, Technical Support. We emphasise that these manuals will be a **chargeable item** and are purely for dealers who have lost or mislayed part or all of their bulletin.

Amendment Instruction sheet for Technical Bulletin No. 26

Remove and destroy pages from Bulletin No. 17 to 25	Replace from Bulletin No. 26	Add from Bulletin No. 26
All Contents Pages	All Contents Pages	
1.2-1/1.2-2	1.2-1/1.2-2	
1.7-5/1.7-6*		
		1.8-19 to 1.8-22
		1.13-3
1.14-1 to 1.14-3	1.14-1 to 1.14-3	1.14-4/1.14-5
		1.15-1
		1.16-1 to 1.16-4
		1.17-1
1.99-11/1.99-12	1.99-11/1.99-12	
1.99-21/1.99-22	1.99-21/1.99-22	
2.1-21	2.1-21	
2.7-5 to 2.7-8	2.7-5 to 2.7-8	2.7-9 to 2.7-11
3.2-1/3.2-2	3.2-1/3.2-2	
		3.2-3f to 3.2-31**
4.5-1	4.5-1	
All Index pages	All Index pages	

* This is correct, this section has in this bulletin moved to 1.16

** We apologise for using letters, this is only a temporary measure until the complete section is re-done

In this bulletin :

**Please copy this document and circulate to all your technical staff.
It will be very useful for technicians to carry with them on site visits.**

Preface

The Technical Bulletin is published in a form which will gradually build into a reference manual. The sections are designed to produce a maintainable structure which will be consistent across future bulletins. As time goes on, items from previous bulletins which are still relevant will be republished. Back copies of Bulletins can no longer be supplied as copies are exhausted. Complete updated manuals, inclusive of binder, will be available from Colin Davis, Technical Support, for dealers with Support Contracts. New Systems Centres will receive one copy free of charge.

Bulletins should be filed so as to produce a single manual.

Where items could logically be entered in several different places, (e.g. a new release of an application package that affects both single and multi-user operation), the second entry will be cross-referenced back to the first.

The sections used will be as follows :

Contents

Section 1   Hardware and ROMS

Section 2   Software

Section 3   Multi-user

Section 4   Documentation

Section 5   Miscellaneous

1.1.5.4   I/O Board and Cabling

The Vx system must be connected to the DSU via the Apricot supplied SCSI signal cable.

In single DSU systems, the SCSI signal cable must be connected to the "SCSI IN" connector on the rear of the DSU.

The internal DSU SCSI signal cable should be connected (respectively) from i/o board PL2 to the Hard Disk drive to the tape drive to the i/o board PL4.

The termination power link J1 should be connected for exernal power, shorting positions 1 and 2 (the left and centre pins of J1 viewed from the rear of the DSU).

In single DSU systems, the DSU termination resistor packs RP1, RP2 and RP3 should be fitted.

The DSU drive power lead(s) may be connected to any of the i/o board connectors PL9, PL10 and PL11.

1.1.5.5   Full Height Tape Drive

The drive should be removed from the DSU to perform these checks.

The terminating resistor packs on the lower p.c.b. of the drive (positions U5 and U41) must not be fitted.

For single DSU systems, the tape drive SCSI address must be set to switch 1 (switch module SW1 position 1 set to ON, all others set to OFF).

1.1.5.6 VX Tape Drive Error Codes

Described below is a list of possible error codes which can be generated by the SCSI Tape drive. Most of the error codes will be trapped and handled by TBACKUP and TRESTORE. If any error codes are displayed they will be in decimal format. To get the correct value convert to hexadecimal format, and take the lower "nibble" or hex digit as the error code. eg.

If your drive generated an error code   79.

convert decimal to hexadecimal   79 -> 4F

take lower hex digit   ———— F

CODE	MEANING	DESCRIPTION
0	NO SENSE	There is no specific information. This could be the case if Sense is requested because of File Mark or End Of Media detected.
1	Reserved	
2	NOT READY	Reports that the cartridge is not loaded.
3	MEDIA ERROR	Unrecoverable data error occurred.
4	HARDWARE ERROR	Power-up Selftest failed, or parity error detected.
5	ILLEGAL REQUEST	Illegal parameter detected in the Command Descriptor Block or in additional parameters.
6	UNIT ATTENTION	A Unit Attention Condition occurred. This status indicates that the cartridge has been removed since the last command. It is returned the first time a command is given after the cartridge has been removed.
7	DATA PROTECT	Returned if writing is requested to a write protected cartridge.
8	BLANK CHECK	The logical End Of Media (end of recorded area) is detected.
9	Reserved	
A	COPY ABORTED	A Copy command was aborted because an error condition was detected on the source or destination device.
B	ABORTED COMMAND	The Drive aborted the command. The Initiator may recoverr by trying the command again.
C	Reserved	
D	VOLUME OVERFLOW	This condition can occur if additional data blocks are appended after the Drive has reported EOM, and there is not sufficient space left.
E	MISCOMPARE	Used by the Verify command to indicate that source data did not match the data read from the tape.
F	Reserved	

1.1.5.7   70MB Hard Disk (Rodime RO3085S)

The drive should be removed from the DSU to perform these checks.

The terminating resistor packs adjacent to the SCSI connector (position P1) must not be fitted.

For single DSU systems, the 70MB drive SCSI address must be set to 7 (jumpers) fitted on address select connector pins 1 to 2, 3 to 4, and 5 to 6).

The termination power facility on the drive must be defeated by removing the diode D10 from the drive (adjacent to the SCSI signal connector, one of the few leaded components on the drive board).

1.1.5.8   150 and 300MB Hard Disk Drives (Maxtor XT-3170 and XT32800)

The drive should be removed from the DSU to perform these checks.

The termination resistor packs adjacent to the SCSI connector (positions RN81, RN82 and RN83) must not be fitted.

For single DSU systems, the 150MB drive SCSI address must be set to 7 (jumpers JP83, JP84 and JP85 on the disk drive pcb fitted).

JP81 open } JP82 fitted	termination power external
JP21 fitted	write data test jumper (Test facility disabled)
JP87 fitted	soft reset enabled
JP86 fitted	bust parity enabled
JP44 fitted	spindle motor start delay disabled
JP42 open	write protect disable (i.e. write enabled)
JP41 fitted	off track write disabled
JP43 fitted	write unsafe circuit enabled

1.1.5.9   SCSI board.

1) The SCSI board requires two PALs to be changed to allow Xenix 386 to function correctly. These PALs will be supplied as standard on the card when stocks permit.

    IC9 Correct SCSB009VC Incorrect SCSB009VA Part No 12118521
    IC10 Correct SCSB010VC Incorrect SCSB010VA Part No 12118621

1.1.6   ROM BIOS 1.1.6 Hidden INT 13H call Function 80H

The SCSI winchester can be formatted with either 512 byte or 1K physical sector sizes. The 1K sector size gives the advantage of greater efficiency and added capacity (with the Maxtor drive). To cope with this, operating systems need to be able to ask the ROM BIOS what the physical sector size is. Therefore a new Int 13H call has been added in ROM BIOS version R1.1.6.

The call can be used not only to get the physical sector size but also the type of drive, so that SCSI can be separated from ST506 drives, and Network Softdisks can be separated from floppy disks.

FUNCTION 80H

Input

AH = Function Number   80H
AL = Reserved   00H
DL = Drive Number   0,1,2......80H,81H.....

Response

Carry Set Either   1) Drive does not exist
         or   2) Drive is ST506 or Floppy drive and therefore has 512
                       byte sectors.

Carry Clear AL   = Drive Type
                     0 = SCSI hard disk drive
                     1 = Network Softdisk

             CL   = Physical Sector Size
                     2 = 512 Byte Physical sectors
                     4 = 1k Physical sectors
                     8 = 2K physical sectors

Note

Softdisks are always 512 byte "physical" sectors. This does not cause a conflict if the SCSI is formatted to 1K physical sectors as a softdisk is really a file, and not an actual device.

All other drive types are reserved for future use by Apricot Computers Plc.

1.1.7 Terminators on DSU, Hard disk drives, Tape drives, etc.

Please note that it is important to correctly identify pin1 on terminating resistors, and also to position pin1 correctly when fitting terminating resistors. Incorrect fitting of terminating resistors can be a considerable source of problems on the SCSI bus.

1.2   XEN-i 386

1.2.1   Adding memory to 80386-based products

The 256k memory SIMMs (Single Inline Memory Modules) used on the 386 motherboards are high specification devices. These are not the same devices that are used on the AM card. The chips on the AM card are numbered 50256cp-12m, and the PCB is HB561003b-12. Those on the motherboard are 51256cp-10 and the PCB is HB561409B-10. Under no circumstances should 256k SIMMs from an AM card or AM card upgrade packs be used on 386 motherboards as these parts are out of specification and will cause intermittent machine problems. The AM card itself can be used on 386 machines.

Although the AM Card is not the preferred method of memory expansion on 386 based products, there is now a maintenance modification to eliminate any problems found with this combination. For further information contact Apricot Computer Services division on 021-511-1234.

1.2.2   RAM expansion kits for XEN-i 386 and AM cards

The replacement XEN-i 386 PAL for IC47 position in this kit has been labelled incorrectly. The device should have been labelled LEPB047VA, but has instead been labelled LIM047VA.

The part is programmed correctly and will function normally. Future production will change the labelling of the PAL so that it is consistent with the Installation Guide.

1.2.3   XEN-i 386 Hard disk drives

30Mb Hard disks and Seagate 45Mb hard disks use RLL data encoding and Rodime 45Mb hard disks use MFM. This means that Seagate and Miniscribe drives use an RLL Controller with different jumper settings. The Rodime uses an MFM Controller and cannot be used with the RLL Controller.

1.2.4   XEN-i 386/30 and Western Digital Controller

Problem

There is a bug in an early version of Western Digital Controller chips on the XEN-i 386/30. This prevents multi-sector Read/Writes over track boundaries. This only affects **MS-DOS 3.3** and Concurrent DOS 386.

Symptoms

Hard disk becomes corrupt.

Solution

Production models were corrected some time ago. If you wish to use one of the above operating systems and have a chip marked WD10-15 in position IC71 on the motherboard, it should be replaced. The current version is WD10-15C (PL28), which can be obtained from Apricot Computer Services.

1.2.5 386 16Mhz AT motherboard.

Problem : Loss of CMOS ram.
Apricot has identified two problems which can cause the CMOS ram to be lost.

1. Ni-Cad The motherboard contains a rechargeable battery, this battery will discharge when the machine is stored or not used for 3 months. Also this battery may not be in a fully charged state where a motherboard has been exchanged or on delivery. It is recommend where this occurs the customer should be advised to leave the machine switched on for 48 hours to allow the battery to fully charge. Fitting an alternative drive can affect performance.

2. Missing Link. Apricot has also found a missing link / jumper on a small number of motherboards. This link 2 connects the power fail sense circuit on the motherboard with the power fail detect circuit in the psu. The link is a wire jumper which is soldered in place. Fit on failure. Link J2 is positioned next to the Motherboard On/Off switch.

NB This does not apply to tower systems and any modifications should be done only by authorised repair centres or Apricot Computer Services.

1.2.6 386 Error Beep Sequence

Each time that the Xen-i 386, Deskside, XEN-S, and Qi computers are powered up the Power On Self Test (POST) is executed. This tests:

Processor system	System configuration
Memory	Display interface
Hard disk drive and controller	Real time clock
Floppy disk drive and controller	System timer
Keyboard	Correct boot disk
ROM checksum	

If all the tests are executed sucessfully, one short beep will be heard from the loudspeaker in the system unit.

If a failure is encountered, one or more of the following responses will be obtained:
     a) a blank screen, **b)** no beep or more than one beep, **c)** an error message

If a blank screen is obtained, check that power is applied to both the systems unit and the monitor.

Check that all cables are properly connected and that all jumpers and switches are correct.

If more than one beep is heard . make a note of the sequence of beeps and look in the following table to determine the source of error. As an example the beep sequence 1-2-3 represents; a single beep followed by a group of three beeps, followed by another group of three beeps.

1.2.6 386 Error Beep Sequence

BEEP SEQUENCE	ERROR
1-1-1	No video card
1-1-3	CMOS RAM read/write test failure
1-1-4	BIOS ROM checksum failure
1-2-1	Programmable interval timer failure
1-2-2	DMA initialisation failure
1-2-3	DMA Page register read/write test failure
1-3-1	RAM refresh verification failure
1-3-3	1st 64K RAM chip data line failure (multibit)
1-3-4	1st 64K RAM chip data odd/even logic failure
1-4-1	1st 64K RAM chip address line failure
1-4-2	1st 64K RAM chip parity failure
2-1-1	1st 64K RAM chip data line failure
2-1-2	1st 64K RAM chip data line failure (bit 1)
2-1-3	1st 64K RAM chip data line failure (bit 2)
2-1-4	1st 64K RAM chip data line failure (bit 3)
2-2-1	1st 64K RAM chip data line failure (bit 4)
2-2-2	1st 64K RAM chip data line failure (bit 5)
2-2-3	1st 64K RAM chip data line failure (bit 6)
2-2-4	1st 64K RAM chip data line failure (bit 7)
2-3-1	1st 64K RAM chip data line failure (bit 8)
2-3-2	1st 64K RAM chip data line failure (bit 9)
2-3-3	1st 64K RAM chip data line failure (bit A)
2-3-4	1st 64K RAM chip data line failure (bit B)
2-4-1	1st 64K RAM chip data line failure (bit C)
2-4-2	1st 64K RAM chip data line failure (bit D)
2-4-3	1st 64K RAM chip data line failure (bit E)
2-4-4	1st 64K RAM chip data line failure (bit F)
3-1-1	Slave DMA register failure
3-1-2	Master DMA register failure
3-1-3	Master interrupt mask register failure
3-1-4	Slave interrupt mask register failure
3-2-4	Keyboard controller failure
3-3-4	Screen memory failure
3-4-1	screen initialisation failure
3-4-2	Screen retrace test failure
4-2-1	Timer tick interrupt failure
4-2-2	Shutdown failure
4-2-3	Gate A20 failure
4-2-4	Unexpected interrupt in protected mode
4-3-1	RAM failure address 010000h to 0A0000h
4-3-3	Interval timer channel 2 fail
4-3-4	Time of day clock failure

1.7 Printers

1.7.1 Printers for VP-Planner

The following printers are supported by VP-Planner, the Lotus 1-2-3 v1A lookalike spreadsheet program supplied with 386 systems :

> Epson FX, MX, RX printers with GrafTrax
> IBM Graphics Printer
> NEC pinwriter
> Okidata P20 colour printer with Plug-n-Print
> Okidata 92/93 series printers with Plug-n-Play
> Texas Instruments 855 printer with Graphics Module

1.7.2 Writer 16, 16c, 17, 21, 32.

The duty cycle for the above printers is 25% duty cycle printing at 50% page density, calculated over an 8 hour period.

1.7.3 Drum replacements for Apricot Laser printer

There have been some reports of the L1 message not being cleared after a drum has been replaced after 10,000 copies. This is caused by using a drum from a starter kit supplied with a new Apricot Laser, or a drum for another type of printer (e.g. Mannesman-Tally). These do not include the components necessary to reset the counter. The recommended source of supply is Cornbow Office Products (021-503-0666). The use of parts not manufactured by Kyocera is not recommended.

1.7.4 Apricot Laser Fault Reports for emulations

When reporting errors on the Apricot Laser when it is emulating another printer, please ensure that the problem does not exist on the printer being emulated. Always test the printer being emulated before reporting a problem.

1.7.5   SEM command for setting emulation mode on Apricot Laser

This command is not documented in the released version of the Apricot Laser manual, but allows emulation mode to be changed without using the FRPO command . The FRPO command affects the EEPROM and therefore makes a change that will survive power off. However the EEPROMS can only be modified 10,000 times, so its use should be kept to the minimum.

SEM 1	-	IBM Graphics Printer
SEM 2	-	Diablo 630
SEM 3	-	Qume Sprint 11
SEM 4	-	NEC Spinwriter
SEM 5	-	Epson FX-80
SEM 6	-	HP LaserJet +

As this feature is not documented in the released version of the manual, it cannot be fully supported, and anyone experiencing problems should use the FRPO command.

1.7.6   Paper in the Apricot Laser

Please read Appendix C of the Apricot laser User Guide before operating the printer. A number of field problems have been caused by users not following the guidelines laid down.

1.7.7   Fujitsu printers - Writers 17, 21

There have been several calls regarding non operation of Fujitsu printers when first attempted.

If a problem should be encountered, the DIP switch setting should be checked. The DIP switch which may be causing the problem is SW1 on bank 2 as this disables all "on-line" functions until the control code DC1 is received if set in the OFF position.

Writer 17/Writer 17B

The Writer 17 Fujitsu printer has been replaced by the Writer 17B which is a Brother 1709. The two printers are almost identical so a straight swap between the two should present no real problems. The new 17B is 20% faster, has serial and parallel interfaces as standard and retails at £70 less than the 17.

1.7.8 Status page service information

On the bottom of the status page print-out for the Apricot Laser (Kyocera) printer there is a line of information similar to the following :-

SERVICE INFORMATION

/0050/0032/1061/0811/AAIAJI/AEIAJI/AHIAJI

Ignoring the first four groups of numbers, the letters that follow are a coded description of the number of copies that the consumables can print before their life is over. i.e.
/AAIAJI/AEIAJI/AHIAJI = /DRUM/DEVELOPER/FUSER

Where the code is as follows :-

Letter	Number
A	0
B	1
C	2
D	3
E	4
F	5
G	6
H	7
I	8
J	9

So /AAIAJI/AEIAJI/AHIAJI = /008098/048098/078098

This means that:	the Drum has 8098 copies left,
	the Developer has 48098 copies left
	the Fuser has 78098 copies left.

1.7.9 Apricot (Kyocera) Laser ROMs

Latest ROMs are version 4.6-1. Features are as follows :-

1)   A new HP Laserjet+ macro buffer has been assigned to the FRPO C4 parameter.
2)   Status page information has been slightly changed to show memory allocation and the C4 parameter.
3)   When attempting to print raster data on an unprintable area and the data value is 0, the printer used to halt. This will now operate correctly.
4)   *Dynamic fonts*
     To maintain compatibility with previous versions the dynamic fonts have been assigned as follows :-

	Old version	**New version**
Dynamic 1	Helvetica	Helvetica
Dynamic 2	Times Roman	Times Roman
Dynamic 3	as above	as above
Dynamic 4	Gothic	Gothic
Dynamic 5	CSA Gothic	Gothic

The new dynamic fonts have an international character set.

5)   *IBM and Epson emulation*
      The cursor pitch has been changed from 17.1735 to 17.14. This is to allow
      correct printing of condensed pitch fonts and graphics data on the same page.

6)   *HP emulation*
      Values have now been assigned to the FRPO P2 and P3 parameters (CR and
      LF action) when in this emulation.

      Note : Application software may reset these parameters incorrectly.

7)   *Diablo emulation*
      Assigning ESC-B is now effective even if the default font is other than font 1.

8)   *NEC emulation*
      Assigning ESC-4 is now effective even if the default font is other than font 1.

1.7.10 Returning Laser printers for repair

It appears that some dealers are still not aware of the problems that can be caused by
shipping laser printers back to Apricot Computer Services without the correct
precautions.The procedure should be as follows:-

1)   Remove the drum unit, place it in its light protective cover and wrap in a black
      plastic bag to ensure full light protection, this should then be shipped separately
      to the printer.

2)   Remove the developer unit and completely seal it or wrap it so there can be no
      toner leakage. This should also be shipped separately to the printer.

3)   Remove the waste toner bottle and seal it with the cap provided. This should then
      be boxed with the developer and drum ready for shipment.

4)   The printer can then be boxed up ready for shipment ensuring that all the
      consumables are packaged separately to the printer so that no toner contamination
      can occur.

The procedure above applies particulary to the Apricot Laser (Kyocera) printer, but a
similar procedure should be followed for all laser printers in the range.

These steps if followed will prevent lengthy strip downs to clean the printer after a toner
spillage and thus decrease the turn around time that the printer is in the repair workshops.

1.7.11 Maximum Cable Lengths

Parallel		3m
Serial	19200 baud	25ft
	9600 baud	50ft
	4800 baud	100ft
	2400 baud	200ft
	1200 baud	400ft

Serial length can be extended by using line drivers.

1.7.12 Serial Printer cables

Serial printing is a difficult area, and it is difficult to produce cables that are suitable for all cases. A cable that works satisfactorily from a particular application with low volumes of data and slow Baud rate, may not work correctly if the application, quantity of output or Baud rate changes. The cables given below have proved to be successful in a wide variety of cases, but cannot be guaranteed for every conceivable configuration.

Xen-i or Xen-S   **Apricot (Kyocera) Laser and Writer 15**

Shell		1	Frame Ground
3	Transmit Data	3	Receive Data
2	Receive data	2	Transmit Data
7	RTS	5	CTS
6&8	DSR/CTS	20	DTR
5	Signal Ground	7	Signal Ground
4	DTR	6	DSR

PC-286   **Apricot (Kyocera) Laser and Writer 15**

1	Frame Ground	1	Frame Ground
2	Transmit Data	3	Receive Data
3	Receive Data	2	Transmit Data
7	Signal Ground	7	Signal Ground
5&6	CTS/DSR	20	DTR

CTS and DSR must both be high.

Qi   **Apricot (Kyocera) Laser**

1		1	Frame Ground
2	Transmit Data	3	Receive Data
3	Receive Data	2	Transmit Data
4	RTS	5	CTS
5&6	DSR/CTS	20	DTR
7	Signal Ground	7	Signal Ground
20	DTR	6	DSR

1.7.13 Serial Cables for PS8/2 Laser Printers

Xen-ior Xen-S (9 pin female)   **PS8/2 (25 pin male)**

2	Receive Data	2	Transmit Data
3	Transmit Data	3	Receive Data
5	Signal Ground	7	Signal Ground
6&8	DSR/DTR	20	DTR

Qi (25 pin female).   **PS8/2 (25 pin male)**

2	Transmit Data	3	Receive Data
3	Receive Data	2	Transmit Data
4	RTS	5	CTS
5	CTS	4	RTS
6&8	DSR/DCD	20	DTR
7	Signal Ground	7	Signal Ground
20	DTR	6&8	DSR/DCD

PC286 (25 way male)   **PS8/2 (25 pin male)**

3	Receive Data	2	Transmit Data
2	Transmit Data	3	Receive Data
4	RTS	5	CTS
5	CTS	4	RTS
7	Signal Ground	7	Signal Ground
6&8	DSR/DCD	20	DTR

Xen (25 pin male)   **PS8/2 (25 pin male)**

1	Frame Ground	1	Frame Ground
2	Transmit Data	3	Receive Data
3	Receive Data	2	Transmit Data
4	RTS	5	CTS
5	CTS	4	RTS
6&8	DSR & DCD	20	DTR
7	Signal Ground	7	Signal Ground
20	DTR	6&8	DSR & DCD

The label sector of the Xen boot disk must be set to the correct baud rate, parity, data bits and stop bits and hardware handshaking should be set. use WCONFIG within Windows to set these parameters.

1.8   Add-ons

1.8.1   PX-Adapters

When fitting a board with an insulating sheet to a PX adapter, the sheet from the board should be removed to enable the board to lie flat. Do not remove the insulating sheet from the PX adapter.

1.8.1.1   PX-Adapter - New version

The PX-Adapter is now being shipped with a replacement PAL, labelled PXQA009VA which fits into location IC9. This should be used **only** if the PX-Adapter is to be used with a QUAD card. It overcomes hanging problems, particularly of remote devices under Xenix.

Keep the original PAL in a safe place, as it will be required if any other card is to be fitted to the PX-Adapter.

For existing PX Adapter / QUAD card installations, the new PAL is available from Apricot Computer Services, and is Part Number 12116721.

1.8.2   Apricot Modems: Current Devices, Drivers & Interfaces

Summary

This document aims to describe the current provision of modems across the Apricot range, including hardware, interfaces, and network support.

This is intended as a detailed guide and pointer to other information. The definitive technical documents are referenced within.

An overview is provided to each of Apricot's modem hardware, device drivers and application interfaces. The functionality for each driver is detailed and the calling mechanism for each is described. The historical background for the adoption of certain interfaces is described. Suggestions for application developer's usage are given. Current software version numbers are also listed.

1.8.2.1   Modem Hardware

All Apricot modem hardware is in the form of internal expansion bus cards. Basically there are two marques of hardware based on Apricot and IBM bus schemes. All are currently supported.

Apricot bus modems

These are double card Apricot bus modems, and have gone through three revisions:

Mark 1 modem:

Integral modem having V.21 and V.23 and V.23 half duplex modes and only able to pulse (loop-disconnect) dial telephone numbers.

Mark 1a modem:

As for the Mark 1, but with a minor change to enable the modem to co-exist in a machine with a LAN card which shares the same expansion interrupt (INT3).

Mark 2 modem:

As for the Mark 1a, but with support for tone (DTMF) dialling. Later versions of the hardware also have provision for the connection of the modem's audio output to the host machine's speaker.

The Mark 2 modem can be differentiated from the previous versions by the connection between the two cards across the top of the modem; on the Mark 2 this is a 25-way terminal / socket strip, on the others it is a ribbon cable.

PX Adapter

All of the above modems can be fitted into a PX adapter for fitting into an IBM-AT bus machine. There is as yet no C2X adapter support for the modem, so the modem card cannot be used in PC bus machines (eg Amstrads).

IBM bus modem

There is currently only one IBM bus modem, this is the Mark 3, or Triple-X modem which is based on Dacom's Unity Gold retail product. This is an AT half-card which takes over the serial ports of the host machine supporting Hayes commands, V.21, V.22, V.23, tone and pulse dialling and is switchable between COM1, COM2, COM3 and COM4. There is also an onboard speaker which can be used to monitor the progress of the call, sound output from the modem can also be connected to the host's onboard speaker.

1.8.3 Memory Map for Quad cards

1) The firmware on the Quad card allows only 8 data bits and no parity. This is as a result of the device being originally developed for Xenix terminals.

2) The I/O addresses on the card are as follows. These should only be used from Assembler or C.

I/O Address

x	(Write)	Channels 0-3 transmit data
	(Read)	Channel 0 receive data
x+2	(Write)	Command register 'A'
	(Read)	Channel 1 receive data
x+4	(Read only)	Channel 2 receive data
x+6	(Read only)	Channel 3 receive data
y	(Write)	Interrupt acknowledge
	(Read)	Status 'A'
y+2	(Read only)	Status 'B'
y+4	(Read/write)	Command register 'B'
y+6	(Read/write)	Interrupt mask register

Where x is 100h, 108h, 110h, or 118h and y is 120h, 128h, 130h, or 138h according to which card is being used.

1.8.3.1 QUAD card and PX-Adapter - New version

See section 1.8.1.1

1.8.4 Numeric Co processor speeds

A numeric co-processor will increase the speed at which numerical calculations are carried out provided that the software being run has been written to take advantage of it. See section 1.99.2 for examples of the increase in speed that it can produce.

In order to run the 80287-3 co-processor on the PC/S range, SW5 must be set to provide an input clock of 14.3 MHz (i.e. it runs at 4.8 MHz). An 80287-6, -8 or -10 will also run correctly in this configuration.

With SW5 in the other position the system clock is used to drive it. In order to use this an 80287-8 or -10 is required. With the system clock set to 10 MHz the 80287 runs with an input frequency of 20MHz (i.e. it runs at 6.7 MHz). These versions of the processor are suitable for the PC/S range only. The 80287-6 can be run in this mode if the system clock is set to 8 MHz.

It should also be noted that only 80287's manufactured within the last 18 months will work correctly since Intel changed the interface specification.

The 80387 runs with a fixed input clock of 32 MHz corresponding to an execution speed of 16 MHz. In practice it runs 4 to 6 times faster than a 5MHz 80287.

On XEN and XEN-i machines, the clock speed is always 4.7MHz.

| *Problem*

|

| On some early 80386 machines, IC29 is a soldered chip. This causes a problem if an
| 80387 should be fitted, as this chip should be removed as part of the installation procedure.

|

| If you wish to fit a 80387 co-processor and IC29 is soldered, not socketed, please contact
| Apricot Computer Services.

1.8.5   AM Boards

1.8.5.1   4MB Memory upgrade kit and AM boards

The following points have come to light when using 4mb addon SIMM's (product code XB8894) and AMBOARDS.

1)   When used in 286 products in conjunction with AMDRIVE.SYS under MS-DOS, only 2mb of memory are available per AMBOARD. This is because of a restriction in the addressing capability of the mapper chip. The /e switch on RAMDRIVE can be used to access the extra 2Mb on a 4Mb board.

2)   When used in 386 products in conjunction with AEMM386.SYS, jumper J1 on the board should be removed to disable parity checking.

3)   To upgrade an AMBOARD to 2MB use the 512K memory modules (Product Code P-XB8422).

1.8.6   1 Mb memory module for PC/s range and PC-286.

Quick Reference Guide No. 2

Please photocopy this page and file with other Quick Reference guides.

For the PC-286 this board must be ordered at the time of upgrade from an Apricot PC/Xi.

1)   Resistor R5 must be carefully removed. Looking from the rear of the systems unit, this is just in front of the bridge assembly about four inches from the left-hand side of the board.

2)   The board fits into sockets PL30 and PL31 on the motherboard.

3)   SETUP must be run, and the amount of extended memory should be set to 1024.

1.8.7   14" Zenith Paper White Monitor

Quick Reference Guide No. 3

Please photocopy this page and file with other Quick Reference Guides

Pin connections

1,2	Signal Ground
3,4,5	Not Connected
6	Highlight Input
7	Video Input
8	Horizontal Sync
9	Vertical Sync

Shell on connector is connected to screening on the cable.

Video Drive Format

Dot clock rate	22MHz
Horizontal resolution	720 dots
Vertical resolution	350 lines, non interlace.
Character Matrix	9 x 14
Characters	80 x 25

Environment

Operating temperature	0 to 37 deg C
Operating humidity	5 to 80% non-condensing
Operating altitude	0 to 10000 feet
Storage temperature	-20 to +60 deg C
Storage altitude	0 to 40000 feet

1.8.8 VGA cards and monitors

VGA cards are no longer being shipped with software included. This is because VGA is supported only under DOS 3.3 or later. All machines shipped with DOS 3.3 include VGA drivers.

Some VGA cards were shipped with corrupt disks. These may be ignored, as the software is included with DOS 3.3.

Please note that normal versions of Autocad do not support VGA. A special version is required. (See section 2.3.13 for details.)

If a VGA monitor is required on a network, VXNET 2.1 & 3,MFNET 7.1 or PC-Share must be installed.

Problem

At the moment some non-Tower equipment out in the field does not contain any driver software for VGA screens nor a version of SETUP.EXE to enable the C-MOS RAM to be configured for VGA.

This means that if a VGA card/monitor are connected to such a system, the message "Invalid configuration - Please run SETUP" will appear.

Solution

The solution to this is to upgrade the system with MSDOS 3.3 that includes the new version of SETUP and the relevant drivers. See section 2.1.6 for details of how to do this.

Also, if connecting a VGA monochrome monitor to the VGA card, the VGAPLUS software must be available to be used by the computer. This should then be loaded by the AUTOEXEC.BAT file as the machine boots.

1.8.9 Installation of Taxan HR19 Monitors

The Taxan monitor cannot be installed as a single screen, you must have two monitors, VGA and Taxan HR19.

The software to install for Windows 2.03 is shipped in the box, to install it you go through the setup routine and for the monitor type and font you select other and read from the floppy disk.

The Taxan card should be setup as shown in the diagram below.

The long cable is used for the monitor, the short one being discarded.
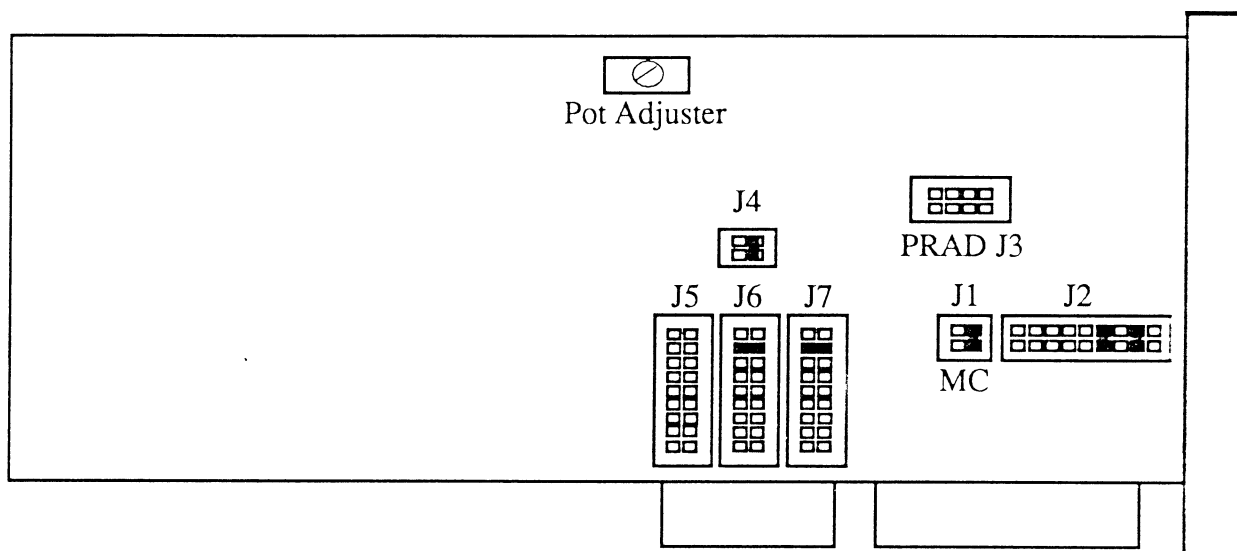
If you have a tower system you may run the card as a 16 bit card. If you have a 386 desktop machine you need to obtain a replacement PAL number LEPB077VC to fit in IC77, next to the EPROM by the reset button. This PAL is available from Apricot Computer Services. For 286 machines you may only run the card in 8 bit slots. Using an XPi box for both 286 and 386 desk-top machines an 8 bit slot is created by removing the smaller of the two connector blocks of the XPi slot.

1.8.10 Adding An External 5.25" Floppy Drive

For Qi (MCA) machines, the drive is fitted to an expansion card and not detailed below.

The interface cables required to connect an external 5.25" floppy drive to an Apricot AT compatible computer are now being included with the floppy drive unit. This has caused some confusion which we will now attempt to clarify.

Current drives are now shipped with two interface cables (fig1). For connection to older system boxes that include an internal coiled interface cable, only cable 'B' need be used. For connection to later system units, the existing short internal floppy drive cable should be replaced with cable 'A' which has multiple connectors for fitting to all variants of AT compatible system, and then use cable 'B' as before.

Connecting to older system units

1. Remove all power and signal connectors.
2. Remove system unit top cover.
3. Uncoil the 34 way floppy interface cable and route through the expansion backplane to the back of the machine.
4. Replace system unit cover.
5. Connect external floppy drive using cable 'B'.
6. Connect floppy power cable.
7. Replace power and signal cables and switch unit on.
8. Edit C-MOS configuration using SETUP.EXE to include external drive.

Note 1
If the internal floppy drive is a 3.5" type, an additional connector is provided on the internal floppy drive interface cable at the point it connects to the C.P.U board. As supplied, the second connector on the cable is plugged onto the board. If the external floppy is required to be assigned as drive 'A' and the internal floppy as drive type 'B', replug the cable using the first connector on the interface cable. This option is required for some copy protected software which expects to have a 5.25" drive assigned as 'A'

Connecting to later system units

1. Remove all power and signal connectors.
2. Remove system unit top cover.
3. Unscrew & lift the drive bridge assembly and remove the internal floppy interface cable.
4. Fit the replacement interface cable 'A' (See Note 2).
5. Replace system unit cover.
6. Connect external floppy drive using cable 'B'.
7. Connect floppy power cable.
8. Replace power and signal cables and switch unit on.
9. Edit C-MOS configuration using SETUP.EXE to include external drive.

Note 2
The replacement floppy interface cable has two connectors at the point it plugs onto the C.P.U board. If the internal floppy drive is required to be assigned drive letter 'A' and the external floppy assigned drive letter 'B', plug the second connector onto the C.P.U board. If the internal is to be 'B' and the external is to be 'A' then plug the first connector onto the C.P.U. This option is required for some copy protected software which expects to have a 5.25" drive assigned as 'A'.

When fitting the new cable to the internal floppy, two connectors are provided, one for 5.25" and one for 3.5". Use the appropriate connector and feed the remaining cable out through the back of the

machine. Finally connect cable 'B' from the back of the machine to the external floppy drive.

(fig 1)
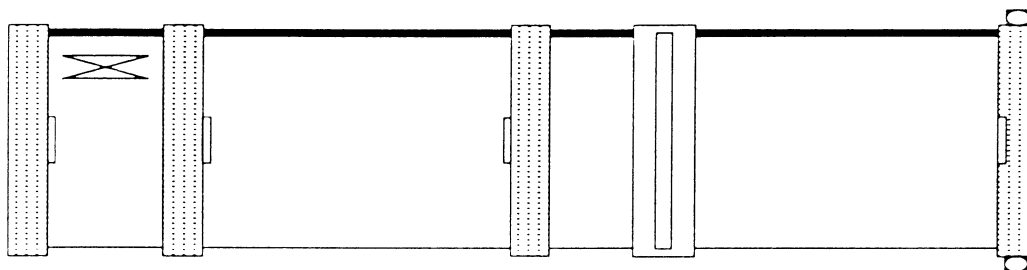
Cable 'A' (Part Number 14046641)

   1   2   3   4   5

1.First CPU Plug
2.Second CPU Plug
3.Internal 3.5" Connector
4.Internal 5.25" Connector
5.External 5.25" Socket
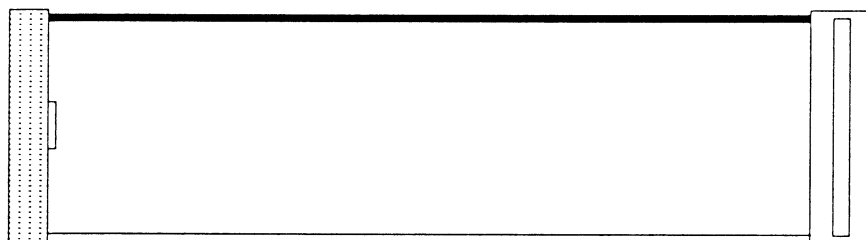
Cable 'B' (Part Number 1800041)

   1   2

1.System Unit Connector
2.External Floppy Connector

(Not To Scale)

1.8.11 TS150 (Wangtek)

Here is a summary of the switch and jumper settings for the TS150 AT style controller card and the values to set in STCONFIG (Sytos V3 software). Each machine has been tested by choosing Set Tape Retension, Set Tape Erase, then Backup File Selected followed by Verify File Selected. (*Selected* defaults to C:\ and all subdirectories). Only use 3M DC600 XTD, DC315 XTD, or DEI Series II Gold **Plus** tapes.

Machine	Cards	Switches 1-10	IRQ	DRQ	DACK	Address	Interrupt	DMA	Note
XEN-i 286		1-7 On,8-10 Off	3	3	3	300	3	3	[1]
XEN-i PC/S	Disk (RLL or MFM)	1-7 On,8-10 Off	3	3	3	300	3	3	[2]
XEN-i 386	Display (MDA or VGA)	1-7 On,8-10 Off	3	3	3	300	3	3	
XEN-i 386	Ethernet Display (MDA or VGA)	1-7 On,8-10 Off	7	3	3	300	7	3	[3]
XEN-s PC	None	1-7 On,8-10 Off	7	3	3	300	7	3	[4]

[1] XEN-i 286 with 1.1.7 ROMs hangs during any tape operation other than retension, fixed by 1.2.1

[2] XEN-i PC/S hangs with Rev B tape controller card, fixed by Rev C (blue wire + cut PCB track).

[3] Western Digital Ethernet usually uses IRQ 3, so move the tape controller to IRQ 7

[4] Mouse port (COM2:) on XEN-s uses IRQ 3, so use IRQ 7 for tape.

The latest Sytos software (Version 3.00) overcomes most of the problems associated with disks larger than 32Mb:

STBATCH works correctly - with version 2 it reported *Not enough memory to hold FAT* .

The *Disk in use xxxx Kb* message in one of the Sytos windows shows the correct value - version 2 showed *0Kb* with >32Mb disks.

The *BIOS image copy* command is still not available for >32Mb disks, but file by file backup is only limited by the capacity of the tape.

It is **not** possible to use the new Sytos software (Version 3) with the Identica drive and interface card - *Tape controller not present* is reported.

1.8.12 Co-Processors

Product	NP41520 387-20MHz	NP41521 387-25MHz	XB8890 387SX-16MHz	XB42633 387-16MHz	XB42639 287-10MHz	XB42664* 387SX-16MHz	Notes
Qi310				✔			}
Qi330				✔			} Replaces code
Qi330t				✔			} JP41509
Qi350i				✔			}
Qi350ti				✔			}
Qi650	✔						
Qi650t	✔						
Qi660		✔					
Qi660t		✔					
Qi660i		✔					
Qi660ti		✔					
XEN-S PC						✔	
XEN-S 200						✔	
XEN-S 210						✔	
XEN-S 250						✔	
XEN-S 240X						✔	
XEN-i 286/30					✔		
XEN-i AWS					✔		
XEN-i 386/45			✔				
385/50 tower			✔				
386/100 tower			✔				
VX150			✔				
VX300			✔				
VX150M		✔					
VX300M		✔					
VX650M		✔					

* The first batch of XB2664 have an incorrect product description on the product label "ADDIN-Qi 387SX 16MHz PROC"

Disk drives

Uses 1.2 Mbyte (5.25") or 1.44 Mbyte (3.5") disk drives. External floppy drive supported by internal connector.

Hard disk drives are either 30 Mbytes RLL Miniscribe or 45 Mbytes MFM Rodime. The appropriate controller card is fitted for each drive.

Keyboard

IBM ATE compatible keyboard with 102 keys. No Apricot MicroScreen or mouse port on the keyboard.

The Apricot keyboard with MicroScreen is available at extra cost.

The following table summarises the differences:

	XEN-i XD range	XEN-i PC/s range
Systems board		
Expansion bus speed	10 MHz	10 MHz
CPU clock speed	6/8/10 MHz	8/10 MHz
Video interface	Yes	Yes
LAN interface	No	Yes
Hard disk controller	Yes	No
DMA channels	8	4
Split baud rates	Yes	No
RAM (minimum)	512 Kbytes	1 Mbyte
ROM	32 Kbytes	64 Kbytes
Apricot mouse port	No *	Yes
System configuration	Jumpers	DIL switches
Coprocessor speed	Fixed	Selectable
Remote boot from ROM	No	Yes
Keyboard		
IBM ATE compatible	No	Yes
MicroScreen	Yes	Optional with
Apricot mouse port	Yes	Xen-i keyboard
Disk drives	20 Mbytes MFM	30 Mbytes RLL
	45 Mbytes MFM	45 Mbytes MFM
Power supply	External (XEN-i)	Internal

* Provided via keyboard mouse port.

1.9.1 Paper White monitors for PC-286 and PC/s range

There is now a version of the paper white monitor for PC-286 products and the PC/s range. This is shipped with a video adaptor. This is identified by a sticker saying VA on the outside of the box. As the product code is the same for both varieties of monitor, please ensure that the Order Processing department are aware of which model the monitor is intended for. It is also important to check that the monitor is the right one before shipping to customers.

The part number of the video adaptor is 11693011, and it is available to authorised repair dealers from Apricot Computer Services as a spare part.

1.9.2 EGA adaptors and Windows 2/Windows 386

Some early Paradise Autoswitch EGA cards will not work correctly with Windows 2 or Windows 386. They can be identified by the letters on one of the gate arrays, which says PEGA 1. The correct gate array is PEGA 1A. If you have this problem, replacement cards can be obtained from Apricot Computer Services.

1.9.3 Xen-i 286 Twin

Please note that the Xen-i 286 Twin does not support an external floppy disk drive. This is because of power supply limitations.

1.9.4 Xen-i ROM BIOS Release history

Release VR 1.1.4 9/4/87 (Xen-i 386)

Final Version of Daughter Board RTC/CMOS RAM support software, with improved RTC read/write protection.

Release VR 1.1.5 12/5/87 (Xen-i, Xen-i 386, PC/S)

    Temporary fix in XEN-i version for NEC 8259 problems.
    New SCSI code release (Vd1.0.0) - requires use of IO.SYS Va 3.20.6 or later.
    Xen-i 386 EGA ROM's now copied into RAM on boot.
    First PC/S ROM BIOS Release (No Omninet Support) 25/5/87

Release Va 1.1.6 10/6/87 (PC/286)

    First PC/286 ROM BIOS Release (No Omninet Support)

These ROMs have special delays for the SONY Full Height drives - if other drives are used they will appear slow.

Release VR 1.1.6 3/7/87 (All)

The delays on floppy drive direction change have been extended to all floppy drives (SONY Full Height is 30ms, Standard drives is 12ms).

> Phantom interrupts causing SCSI and Omninet 2 problems now correctly handled.
> System lockup when no video card present (VX Servers) corrected.
> Omninet 2 Remote boot code included in VX WS and PC/286 ROMs.

Release Va 1.1.7 10/7/87 (VX WS/AWS)

> Floppy disk initialisation code changed to allow for non-present FDC.

Release VR 1.1.7 14/08/87 (All)

> Winchester Types 21 and 22 defined for Toshiba 46 and 65 Meg Drives.

Release VR 1.1.8 13/10/87 (All)

> CMOS RAM code modified to preserve relationship between address and data accesses.
> Winchester type 26 defined for RLL Seagate ST157R 49M drives.
> 8042 handling during gate A20 switching corrected.

Release VR 1.1.9 13/1/88

> Winchester Types 43-46 defined for RLL and Non-RLL Maxtor and Seagate Drives.
> Gate A20 code corrected.

Release Version VR 1.2.1 22/7/88

> New versions now based on Phoenix ROM BIOS PLUS V1.10.

> Only **two floppy drives** are now supported.

> Minor bugs fixed with software which switches between real and protected mode (e.g. QNX and Golden LISP)

> Novell Netware (non dedicated) should now function correctly.

> Remote boot of VX WS machines over Novell or other third party networks is now supported.

> Video cards with strange ROM's now work correctly. These were upset when we started copying EGA ROM'S to RAM for faster execution and compatibility with some EGA cards. (eg. ETAP High Resolution Board)

Compatibility problem with IBM XENIX (release 2) and SCO XENIX SYSTEM V fixed.

SCSI drivers changed to fully support the new SCSI board addresses.

ALL ROM BIOS's now only require 32k ROM.

Added Seagate ST414R 122 Meg RLL drive type 36.

Floppy disk initialisation code no longer detects an Irwin tape drive on drive selects 0 or 1 as a floppy

Key click now disabled. This avoids problems with some communications packages e.g. PRIMELINK

The beep duration has now been reduced. This is mainly cosmetic but may improve serial driver performance.

Current ROMs are detailed in 1.99.4

1.9.5 Xen-i PC/S Technical Reference Manual

The Xen-i PC/S Technical Reference Manual is not detailed on current price lists. However the manual is in stock (at time of printing) and is available from the Sales Desk by quoting product code:-

AGFC12   RRP £45

1.9.6 Paradise VGA Cards with Xen-i (PCs)

To install a paradise VGA card in a PCs style Xen-i machine the following steps must be followed:

a Disable on board video by switching SW2 Switch 5 to ON
b Set to colour (regardless of mono or colour monitor) by switching SW2 Switch 1 to ON
c Some applications require you to run the VGAPLUS utility and set to VGAPlus Color.

This is done REGARDLESS of whether you are running a mono or a colour monitor as it is the board that is a colour board.

1.9.5 Winchester Drive Parameter Table

CYLS	HDS	WPRE	PARK	SPT	TYPE	DRIVE
306	4	128	305	17	1	IBM 5.25 - 10 Meg
615	**4**	**300**	**615**	**17**	**2**	**IBM 20M / New Miniscribe**
615	**6**	**300**	**615**	**17**	**3**	**IBM 5.25 - 30 Meg**
940	8	512	940	17	4	IBM 5.25 - 62 Meg
940	6	512	940	17	5	IBM 5.25 - 46 Meg
615	4	none	615	17	6	IBM 5.25 - 20 Meg
462	8	256	511	17	7	IBM 5.25 - 30 Meg
733	5	none	733	178	8	IBM 5.25 - 30 Meg
900	15	none	901	17	9	IBM 5.25 - 112 Meg
820	3	none	820	17	10	IBM 5.25 - 20 Meg
855	5	none	855	17	11	IBM 5.25 - 35 Meg
855	7	none	855	17	12	IBM 5.25 - 49 Meg
306	8	128	19	17	13	IBM 5.25 - 20 Meg
733	7	none	733	17	14	IBM 5.25 - 42 Meg
-	-	-	-	-	15	- - - - - - - - -
612	4	0	663	17	16	IBM 20M / Old Miniscribe
977	5	300	977	17	17	IBM 5.25 - 40 Meg
977	7	none	977	17	18	IBM 5.25 - 56 Meg
1024	7	517	1024	17	19	IBM 5.25 - 59 Meg
733	5	300	732	17	20	IBM 5.25 - 30 Meg
733	7	none	733	26	21	Toshiba MK 134FA 65M RLL
733	5	none	733	26	22	Toshiba MK 133FA 46M RLL
306	4	0	336	17	23	IBM 5.25 -10 Meg
306	2	0	306	17	24	Rodime 5 Meg
1024	5	none	1024	17	25	Microscience HH - 1050 40
820	6	none	821	17	26	Seagate ST251 40Meg
918	**11**	**none**	**918**	**17**	**27**	**NDR 1105 80 Meg**
306	**4**	**0**	**306**	**17**	**28**	**Rodime 10 Meg**
615	4	256	672	17	29	NEC D3126 20 Meg
615	8	none	615	17	30	Newbury Penny 40 Meg
612	4	0	732	17	31	Nippon NP03/26S 20 Meg
612	6	0	732	17	32	Nippon NP03/38S 30 Meg
640	4	none	685	17	33	Nat Pan JU - 116 20 Meg
872	**6**	**0**	**872**	**17**	**34**	**Rodime RO81x 40 Meg**
872	7	0	872	17	35	Rodime RO814 50 Meg
1024	9	none	1024	26	36	Seagate ST414R 122 Meg
872	3	0	872	17	37	Rodime RO812 21 Meg
615	**4**	**300**	**615**	**26**	**38**	**Miniscribe RLL 31**
872	6	0	872	26	39	Rodime RO81x RLL66
615	8	128	664	17	40	IBM 5.25 - 40 Meg
917	15	none	918	17	41	IBM 5.25 - 114 Meg
1023	15	none	1024	17	42	IBM 5.25 - 127 Meg
1024	8	none	1024	17	43	Maxtor XT1120R 68 Meg
1024	**8**	**none**	**1024**	**25**	**44**	**Maxtor XT1120R RLL 100meg**
615	6	none	615	17	45	Seagate ST157R 30 Meg
615	**6**	**none**	**615**	**26**	**46**	**Seagate St157R 46 Meg**
-	-	-	-	-	47	- - - - - - - - -

Drives in **bold** are used across the Apricot Range

1.9.6 Xen-i PC/S Technical Reference Manual

The Xen-i PC/S Technical Reference Manual is not detailed on current price lists. However the manual is in stock and available from the Sales Desk by quoting product code :-

AGFC 12   RRP £45

1.10 PC-286

1.10.1 Available Power

The 65W power supply gives :-

```
+5V  @    6.0A
+12V @    1.5A (This +12V is used by the monitor only)
+12V @    2.1A (This +12V is used by the logic circuits)
-12V @    0.25A
```

Power requirements are :-

	+5V	+12V	-12V	Product Code
Motherboard	3.5A	0.05A	0.05A	
Floppy disc drive	0.5A	0.3A	0.0A	
Hard disk drive (10 or 20Mb)	0.5A	0.8A	0.0A	
PC/Xi Keyboard	0.0A	0.1A	0.02A	
Monitor	0.0A	1.5A	0.0A	
Total for basic system	4.5A	1.5A+1.25A	0.07A	
Available power	**1.5A**	**0.85A**	**0.18A**	

Optional items :-

	+5V	+12V	-12V	Product Code
Xeni Microscreen Keyboard	0.0A	0.2A	0.03A	CH8557
VX Keyboard	0.3A	0.0A	0.0A	
LAN chip	0.1A	0.0A	0.0A	XB9593
80287 chip	0.5A	0.0A	0.0A	P-XB800287
Triplex modem	0.15A	0.02A	0.02A	P-IHMM12
Above memory card	1.3A	0.0A	0.0A	P-XB8436
EGA card	0.85A	0.0A	0.0A	XK7510
5.25" External Floppy	0.65A	0.4A	0.0A	CH7606
3.5" Tape add-on	0.75A	1.0A	0.0A	

Therefore the external tape drive cannot be used on PC-286. You should also be very careful about adding other items.

e.g. A PC-286 with XEN-i Keyboard, 80287, LAN chip and a 5.25" External Floppy is an allowable configuration, but if a VX keyboard were used instead, the power limit on the +5V line would be exceeded.

1.10.2   Recommended parallel cable for PC-286

Some software will not print correctly on PC-286 with the original Apricot parallel printer cable, as it did not include the ACK signal. This includes Windows, Wordstar-4, Supercalc 4, WordPerfect 4.1 and Lotus 1-2-3 Release 2.

The correct cable to use is WC30155, which is available from Apricot Computer Services.

The connections on this cable are as follows :-

PC-286	Printer	PC-286	Printer
1	1	11	11
2	2	12	12
3	3	13	13
4	4	14	14
5	5	23	23
6	6	30	30
7	7	31	31
8	8	32	32
9	9	33	33
10	10	36	36

1.10.3 Serial Port Pinouts

Here are the serial port pinouts for the PC286 (XEN upgraded to IBM/AT compatable):

Pin	Signal	Pin	Signal
1	FG	14	NC
2	Tx Data	15	NC
3	Rx Data	16	NC
4	RTS	17	NC
5	CTS	18	NC
6	DSR	19	NC
7	0 volts	20	DTR
8	DCD	21	NC
9	NC	22	Ring Indicator
10	NC	23	NC
11	NC	24	NC
12	NC	25	NC
13	NC		

NC = Not Connected

1.10.4 PC286 and the Microsoft Mouse.

The serial port on the PC286 is a 25 way female to allow users of the old PC to continue using their old leads. This presents problems when trying to connect a MS Serial Mouse. It is advised that the old keyboard be retained which has an Apricot Mouse socket in the rear of the keyboard, but the ATE (12 function key) keyboard has no such socket so the Apricot Mouse cannot be used.

There are three ways to get this to work:

a) To allow a MS Serial mouse to work a "gender-bender" has to be built to convert the 25 way female to a 9 way male connector so that in effect you have a Xen-i serial port (9 way male). This may be the prefered, but slightly more difficult method, as it then allows any products made for the Xen-i serrial port to just plug in.

Take a 25 way male and a 9 way male connector and wire them together using the pin connections below. Plug the MS Serial Mouse into the 9 way male connector and the 25 way male connector into the serial port of the PC286.

25 Way male Connector to 9 Way male Connector

```
 2 -------------------------------3
 3 -------------------------------2
 4 -------------------------------7
 5 -------------------------------8
 6 -------------------------------6
 7 -------------------------------5
20 ------------------------------4
22 ------------------------------9
```

b) Use the 25 way female connector supplied with the MS-Mouse and wire up two 25 way male connectors 'straight-through'.

c) The other alternative is to buy an XPi box for the side of the machine and to plug in the Microsoft Bus Mouse.

To install the MS Serial Mouse copy MOUSE.SYS from the disc supplied with the MS Mouse to the root directory of your boot disc and run windows setup to tell windows you have a **Microsoft Mouse (Serial or Bus)**. Ensure your CONFIG.SYS has the line DEVICE=MOUSE.SYS and then reboot your machine with the mouse connected.

1.10.5 PC286 Repeating Keys

Several problems have been reported where keys repeat in several different applications. The problem i: is been found to be the MOUSE.SYS. Any revision of this after 3.20.4 does not work particularly well with the PC286. If you have a problem where keys are being repeated, the earlier version of MOUSE.SYS is available from Technical Support.

1.11   Xen-i 386-50/100 (tower systems)

1.11.1   BOS on tower systems

Problem

BOS running on the Tower system requires 512 byte sector size. Some early systems are formatted as 1024 byte sectors. This is not a problem with product currently being shipped.

Solution

Format disks with HDFORM, and do not use FDISK. HDFORM is available to Authorised Repair Centres, as specified in section 2.1.5 of the Technical Bulletin.

1.11.2   Keys for tower systems

Users who lose the keys for tower systems can obtain replacements from Apricot Computer Services. It is necessary to supply the lock number, which is on the barrel of the lock.

1.11.3   PAL changes for tower systems

1)   To run an expansion card which uses INT9 line a new PAL has to be installed in the back plane.

   IC5 Correct BPLCOO5VB

   Part Number 12118421 Rev B (Must be quoted)

2)   The tower has the option of two back planes, a City Desk back plane which has special slots 5 to 8 which do not support bus master cards and a standard 10 slot IBM AT back plane.

   The two back planes differ in the following IC locations, IC11 and IC12.

   The IBM AT standard back plane has a 14 way header installed in IC11 and 12
   The City Desk back plane has 74f08 chips installed in IC11 and IC12.

1.11.4   Filters on tower Systems

The tower 386 product is fitted with 2 filters on the rear of the unit.
These filters must be checked on a regular basis (once a month or as required) for the build up of dust and dirt. Where necessary the filters should be removed and cleaned.

Removing Filters
The filter is removed by pulling the black plastic filter surround which unclips at the top and bottom. The filter pad and plastic screen can be then be removed for cleaning.

Cleaning Instructions
Wash in warm water with a small quantity of liquid soap. Please ensure the filters are dried before refitting them.

Replacement filter assemblies can be purchased as a spare from Apricot Computer Services.

1.12 Floppy Disk Drives

1.12.1 Xen i 3.5" Disk Drive Diagnostics

There are a number of reasons why end users can experience problems on Xeni 3.5" disk system and this document has been produced to assist in the debugging of such problems.

a) Media

The 3.5" floppy drive is primarily a 1.44Mb floppy disk drive and is designed to use SONY / APRICOT HD media (Apricot product code DA13000). Apricot do not guarantee floppy operation with other manufacturers' media. It has been found that poor quality media can damage the disk heads.

The 3.5" floppy drive will also read and write 720k and 315k disks although the error rate may increase.

Media must be stored in a suitable environment (cool - dry - dust free and away from magnetic devices).

Media must be handled carefully ensuring correct insertion into the floppy drive.

Where data copied to a floppy is required for a security reason (Backups - Data transfer) it is always recommended to use the verify option on the UTILITY or switch verify "on" in AUTOEXEC.BAT:

Syntax : VERIFY = ON.

Please remember that damage can occur very easily on disk media, and as the data density increases the greater the possibility dust and mishandling will cause a problem.

b) Drives MP-F73W

Apricot experienced a problem on the first batch of 1.44Mb floppy drives where the micro switches which control the write protect and writing density were contaminated on manufacture. This caused the following errors during use :-

Unexpected "Write protect errors".
Track zero bad or unusable.
Data errors reading drive A.

New reworked drives can be identified by checking the micro switches just behind the front floppy door. Lift the flap and check if the switches have a white spot or stripe on the top of the body of the switch, this indicates a new reworked drive.
Apricot Computer Services are upgrading suspect drives as required.

A later design of floppy drive which does not have a white spot / stripe but does not have the problem can be identified by an additional switch S5 on the PCB. This selector switch S5 must not be adjusted.

c) Controllers

There are no adjustments required on the floppy disk controller.

d) Software

If a disk has been formatted at 720k then it should not be reformatted at 1.44Mb without bulk erasing as the overwrite current will be different.

System configuration setup :-

The available drive types in the CMOS ram changed between VD1.0.1 and VR1.1.1 roms. When changing roms for the later version the CMOS ram should be checked with SETUP VD1.2.2 or later.

Type 1 =	5.25" 40 Track
Type 2 =	5.25" 80 Track
Type 3 =	3.5" 720k
Type 4 =	3.5" 1.4Mb

Correct System Software Versions :-

The following software versions or later must be used when writing, formatting or backing-up data to 3.5" floppy disks :-

IO.SYS	VR 3.20.6
FORMAT	VR 3.20.5
BACKUP	VR 1.5.4
RESTORE	VR 1.5.4
SETUP	VR 1.2.2
ROMS	VR 1.1.8

Disk formatted on earlier versions should be reformatted.

Network :-

A problem has been found when using backup across the network in unpacked format where the following error message can be produced.

   Error writing drive "X" . Where X is the server floppy drive letter

Backup over the network must be in packed format. When using packed format then the disks must be cleared before use.

   Syntax :-

      Backup C:*.* F:apricot   where F: is the server floppy drive.

e) Testing

Where a disk or drive is suspect then TES140 can be used to verify the media involved. All of the above should be taken into account when checking for a problem.

f) XENIX

The old version of Xenix 1.7.* has an error which causes floppy disks to give errors during format. These errors are only reported during backup. The error can be corrected by running the command *tar tvf /dev/rfd0hd* which clears the controller if the read errors have been occurring.

1.13 Hard Disk Drives (Winchesters)

1.13.1 Seagate 46.8 Mb RLL ST-157R 28ms

Problem : Winchester disk fails to spin up.

Apricot and Seagate have identified a problem with a batch of ST-157R disk drives where they fail to spin up at power on. The failure is caused by contamination of the motor during manufacture.

Identification : Spindle motor build version "V"

The faulty motors can be identified by a code indicated on the left side of the disk chamber when viewed from the interface connector. This code is on a white label and where the first character is a "V" on a drive which fails to spin up, report the failure to Apricot Computer Maintenance.

1.13.2 Seagate 46.8 Mb RLL ST-157R 40ms

Problem : Poor disk performance.

Apricot have identified a dealer which has been installing third party supplied Seagate 46.8 Mb RLL ST-157R 40ms devices at a lower cost than an Apricot supplied device. Please note and take care as these devices are cheaper due to the slow step rate of 40ms not 28ms.

1.13.3 Maxtor 150Mb and 300Mb.

Problem : New higher speed versions.

Apricot are now suppling a new version of the above drives in VX-DSU's and as add-in products. These drives require a new version of SFORM.EXE Vb 1.0.2 to correctly format the disk. This will be issued under the Product Support Agreement.

Identification : 150Mb - 16ms and 300Mb - 16ms .

150Mb   Old Model number XT-3170 New Model number XT-4170

300Mb   Old Model number XT-3280 New Model number XT-4280

Availability : Tes032 Vr1.2 is available to Apricot System Centres on request.

1.13.4 Winchester Drive Parameter Table

CYLS	HDS	WPRE	PARK	SPT	TYPE	DRIVE
306	4	128	305	17	1	IBM 5.25 - 10 Meg
615	**4**	**300**	**615**	**17**	**2**	**IBM 20M / New Miniscribe**
615	**6**	**300**	**615**	**17**	**3**	**IBM 5.25 - 30 Meg**
940	8	512	940	17	4	IBM 5.25 - 62 Meg
940	6	512	940	17	5	IBM 5.25 - 46 Meg
615	4	none	615	17	6	IBM 5.25 - 20 Meg
462	8	256	511	17	7	IBM 5.25 - 30 Meg
733	5	none	733	178	8	IBM 5.25 - 30 Meg
900	15	none	901	17	9	IBM 5.25 - 112 Meg
820	3	none	820	17	10	IBM 5.25 - 20 Meg
855	5	none	855	17	11	IBM 5.25 - 35 Meg
855	7	none	855	17	12	IBM 5.25 - 49 Meg
306	8	128	19	17	13	IBM 5.25 - 20 Meg
733	7	none	733	17	14	IBM 5.25 - 42 Meg
-	-	-	-	-	15	- - - - - - - -
612	4	0	663	17	16	IBM 20M / Old Miniscribe
977	5	300	977	17	17	IBM 5.25 - 40 Meg
977	7	none	977	17	18	IBM 5.25 - 56 Meg
1024	7	517	1024	17	19	IBM 5.25 - 59 Meg
733	5	300	732	17	20	IBM 5.25 - 30 Meg
733	7	none	733	26	21	Toshiba MK 134FA 65M RLL
733	5	none	733	26	22	Toshiba MK 133FA 46M RLL
306	4	0	336	17	23	IBM 5.25 -10 Meg
306	2	0	306	17	24	Rodime 5 Meg
1024	5	none	1024	17	25	Microscience HH - 1050 40
820	6	none	821	17	26	Seagate ST251 40Meg
918	**11**	**none**	**918**	**17**	**27**	**NDR 1105 80 Meg**
306	**4**	**0**	**306**	**17**	**28**	**Rodime 10 Meg**
615	4	256	672	17	29	NEC D3126 20 Meg
615	8	none	615	17	30	Newbury Penny 40 Meg
612	4	0	732	17	31	Nippon NP03/26S 20 Meg
612	6	0	732	17	32	Nippon NP03/38S 30 Meg
640	4	none	685	17	33	Nat Pan JU - 116 20 Meg
872	**6**	**0**	**872**	**17**	**34**	**Rodime RO81x 40 Meg**
872	7	0	872	17	35	Rodime RO814 50 Meg
1024	9	none	1024	26	36	Seagate ST414R 122 Meg
872	3	0	872	17	37	Rodime RO812 21 Meg
615	**4**	**300**	**615**	**26**	**38**	**Miniscribe RLL 31**
872	6	0	872	26	39	Rodime RO81x RLL66
615	8	128	664	17	40	IBM 5.25 - 40 Meg
917	15	none	918	17	41	IBM 5.25 - 114 Meg
1023	15	none	1024	17	42	IBM 5.25 - 127 Meg
1024	8	none	1024	17	43	Maxtor XT1120R 68 Meg
1024	**8**	**none**	**1024**	**25**	**44**	**Maxtor XT1120R RLL 100meg**
615	6	none	615	17	45	Seagate ST157R 30 Meg
615	**6**	**none**	**615**	**26**	**46**	**Seagate St157R 46 Meg**
-	-	-	-	-	47	- - - - - - - -

Drives in **bold** are used across the Apricot Range

1.13.5 Hard Disk Formatting on New Machines

Now Apricot computer systems are not supplied with software already installed on the hard disk, Systems Centres are formatting the winchesters on delivery, this may cause a problem when the systems have been subject to low temperatures overnight.

If the winchesters are formatted at temperatures which are out of specification the head alignment will alter due to expansion causing the winchester to fail when warm. Always format or load software at room temperature, this will ensure the winchester operates at both ends of the temperature range.

Operating Temperatures.

Miniscribe 30Mb
Operative	5°C to 50°C
Operative Termal gradiant	10°C/hr

Segate 50Mb
Operative	10°C to 45°C
Operative Termal gradiant	10°C/hr

Where systems have been subject to low temperatures the time to reach operative temperature can be up to two hours. Please chech the temperature of the winchester before formatting after overnight delivery.

Sympton.
The winchester fails after a short period of time.

Solution
The winchester must be formatted and loaded at operational temperature.

1.14 Apricot Qi (MCA Architecture)

1.14.1 SIN number.

The "Serial Identification Number" is an additional level of security on the Apricot Qi. The SIN number is encoded into every motherboard and when the battery is disconnected the unit will prompt the user for this SIN number before allowing access to the operating system. This number is recorded on a removable label fixed to the floppy disk controller where the Qi security is enabled this label should be removed and stored with the reference diskette and the master Qi card in a secure place.

The Qi 600 range will have the SIN number located elsewhere on the motherboard

It is important that if security is NOT being used, the SIN number stays in place on the motherboard

1.14.2 Qi Serial Cable

See section 1.16

1.14.3 Windows 386 and Paper-white Monitors on Qi and Xen-s

There is a known problem with Windows 386, a leaflet should be in the "Environment Pack" explaining the fix. Qi and Xen-s with a VGA Paper-white monitor, entry into Windows first time is ok, but after re-booting entry into Windows results in the error "Suitable Video Adapter Required". This is fixed with the line:

MODE CO80

This is required EVERY TIME you go into Windows and is best put in a WIN386.BAT batch file. eg.

```
ECHO OFF
C:
CD\WIN386
MODE CO80
WIN386
MODE MONO
```

1.14.4 Qi ROM Release History

Qi 300 Series, ROM BIOS Latest Version V1.02.06

Changes since Release version 1.02.05 12 December 1988

> Winchester drive type 40 - Toshiba RLL 65Mb drive added
> Video initialisation problem of 40 column mode removed
> Machine Identification problems with MADGE Token Ring card cured

Changes since Release version 1.01.04 8 November 1988

> Winchester type 38 - 30Mb Miniscribe - parking zone changed to cylinder 663
> EMS enable bit and RAM Shadow state now reset on Soft boot
> Machine Identity to software changed
> ROM text messages referring to Qi removed for OEM variants
> Recalibration of delay routines after copying of ROM BIOS into shadow RAM
> NMI handler on detecting I/O channel check no longer performs a Channel Reset
> Crashes caused by uninitialised Security data now corrected

Changes since Release version 1.01.03 28 October 1988

> POST routines detecting plug-in video now performed after POS setup
> POS now sends pos[2] to pos[5] from CMOS
> POS setup will now allow a single monitor to be connected to the 8514/A for running the reference diskette
> Initialisation routine now looks for second drive before floppy to prevent detection of Tape Drive as a floppy

Changes since Release version 1.01.01 23 September 1988

> Winchester parameters for types 36 and 37 now include write precompensation values
> Timer 24 hour rollover flag usage modified
> POST error message for serial port now terminates in CR, LF
> Hard disk initialisation for type 255 now corrected
> IRkey now absorbed before Logon screen
> ROM BIOS now always shadowed on machines with more than 1Mb. Is controlled by CMOS flags with 1Mb or less
> Tecmar initialisation routines now moved to provide ARC and Tecmar utility compatibility

1.14.5 Clearing the CMOS RAM on Qi machines

If the security system is preventing access to a Qi (eg when the master password is not known or the Qi card has been lost) that machine must be completely reset by erasing the contents of the CMOS ram.

Switch off the computer and remove the top cover. Disconnect the cable from the connector labelled 'battery' at the front of the motherboard (just behind the speaker). Wait for about 3 minutes and then switch the machine back on. After the copyright message and memory count you should see something like

    error 161 - real time clock failure (Battery)
    please reconfigure and retry
    strike the F1 key to continue

If the security system is still enabled you will get the message 'activate Qi card' etc. then switch off and wait for a longer period of time.

Make sure there is a copy of the Apricot Reference Disk in the floppy drive, then press F1. You will see the prompt to enter 'System ID Number' (See section 1.14.1), type in the number followed by return. The reference disk should now load and prompt you to press any key.

    warning 57, Value for drive type .....
    warning 59, CMOS indicated drive 1 when none was found, updating CMOS .....
Then 'power-on-self-test' messages, in blue box, should include
    161, rtc bad battery flag bit is set, press any key to continue
after which you will be prompted to press CR to run automatic configuration. Ignore any errors and wait until configuration complete, press any key appears.

Remove the reference disk and reconnect the battery, then press any key to reboot. After the memory count error 163 - Time date not set, press F1 to continue, should appear after which the machine boots successfully from the hard disk. Boot from the reference disk again and reset the date and time and setup the security system as required.

With no disk in the floppy the machine should reset with no errors and boot from the hard disk.

1.14.6 Qi Reading IBM PS/2 Floppy Disks

It would appear that disks that have been formatted in an IBM PS/2 using the command FOR-MAT <drive> /N:8 cannot be read in a Qi. This format is for double density but the PS/2 seems to format the disks as high density and then only use 9 sectors per track to give 724k. They can be read on a Qi however if the High Density hole is made through the diskette, the Qi then thinks they are HD disks but 720k capacity. As the PS/2 has no way of determining whether a disk is DD or HD this would inevitably be at risk. Some applications software has been distributed on disks formatted in the above manner and has been unable to be copied onto Qi.

1.14.7 Qi Beep Error Sequence

See Section 1.2.6

1.14.8 Latest Release of Security Processor

A new release of the Qi security processor, VR1.04.1, is now available from Apricot Computer Services. This new processor cures spurious ERROR 700 and Security RAM Checksum errors. The processor is located in IC94, just below the hard disk chassis, near the front of the machine.

.1.14.9 Disabling on-board Ethernet

The Qi on-board Ethernet hardware can be disabled by modifying the relevant adapter description file, @6BBA.ADF, on the reference disk.

Use EDLIN (or a text editor) to change the 5th line below the opening comments
from   pos[0] = 1xxxxxxxb   ; Ethernet enable
to   pos[0] = 0xxxxxxxb   ;Ethernet disable

Reboot the machine from the reference disk and run automatic configuration. The new pos value is saved in CMOS ram and will be written to the Ethernet hardware each time the machine is booted. The ETHER592 driver will report Ethernet hardware disabled by POS or DIP switch.

To re-enable the on-board Ethernet change pos[0]=0xxxxxxxb back to pos[0]=1xxxxxxxb and run automatic configuration again.

Alternatively make 2 copies of the original file @6BBA.ADF with other names, edit one of the new files to make pos[0]=0xxxxxxxb and COPY this, or the other new file, to @6BBA.ADF to disable or enable respectively.

We have also produced a new version of the ADF which has the enable/disable bit available as a named item with a prompt and choices so that the usual reference disk menu driven configuration method can be used. This file, @6BBA.CSD, does not need to be edited; just copy it to @6BBA.ADF on the ref disk, then reboot and choose change configuration then select Enable or Disable. The file is available on the Technical Support Bulletin Board.

1.14.10 Security.Sys

The present versions os SECURITY.SYS and AEMM386.SYS clash, the current
AEMM386.SYS VD4.00.0 will be modified accordingly. We have received a new version of
SECURITY.SYS version 1.04.02, this is to cure problems with Micro-Soft Word and not clashing problems with AEMM386.SYS.

1.14.11 Qi 300 Range Performance

The performance of the Qi 300 range can be reduced due to an incorrect switch setting on the motherboard. The switch, SW10, is located near the front right hand corner of the 80386 socket, and is labeled 286.
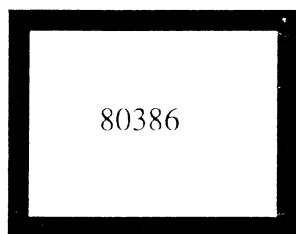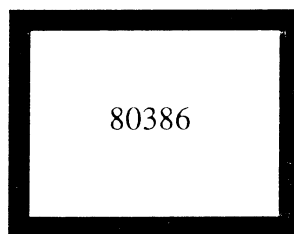
CORRECT   In-correct

1.14.12 40-MByte Tape Drive Jumper Settings

The jumper settings which are illustrated on page 3 of the Apricot 40-MByte Tape Drive installation guide are incorrect. Below are the corrected jumper settings. Always remember to Retension any tape that has been stored for a period of time or subjected to extreme temperatures.

Power
Socket

Jumpers

Ribbon
Cable
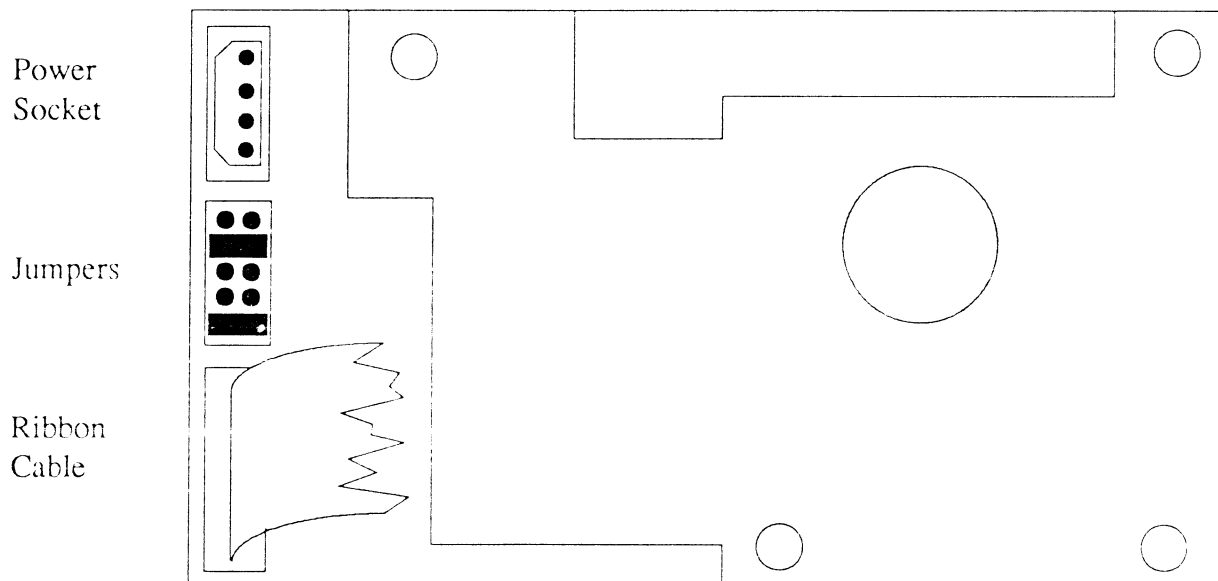
1.15 XEN-S (IBM AT Architecture)

1.15.1 Reading 720K Disks

A problem can occur after soft reset giving errors reading 720K floppy disks. There is a hard-
ware upgrade to solve problems of this sort. To identify if your machine has this modification
check for 150 ohms between Pin 1 of RP1 and solder pad 7 on the motherboard (just behind the
floppy disk connector). If you can not get 150 ohms then please contact Apricot Computer
Services if you have such a problem.

1.15.2 AMCards

It is advised that jumper J2 (wait states) should be fitted on the AMCard.

1.15.3 Reading Disks Formatted on an IBM PS2

Please see Section 1.14.6 as this is applicable to Xen-S machines as well as Qi.

1.16 Serial Cables

1.16.1 Maximum Cable Lengths

Parallel		10ft	(3m)
Serial	19200 baud	25ft	(7.6m)
	9600 baud	50ft	(15.2m)
	4800 baud	100ft	(30.5m)
	2400 baud	200ft	(61m)
	1200 baud	400ft	(122m)

Serial length can be extended by using line drivers or use of low loss cables. For special installation of RS232 cabling (mainly terminals) contact Apricot Computer Services, Installations.

1.16.2 Serial Printer cables

Serial printing is a difficult area, and it is difficult to produce cables that are suitable for all cases. A cable that works satisfactorily from a particular application with low volumes of data and slow Baud rate, may not work correctly if the application, quantity of output or Baud rate changes. The cables given below have proved to be successful in a wide variety of cases, but cannot be guaranteed for every conceivable configuration.

Xen-i or Xen-S / **Apricot (Kyocera) Laser and Writer 15 (WC30200)**

Shell		1	Frame Ground
3	Transmit Data	3	Receive Data
2	Receive data	2	Transmit Data
7	RTS	5	CTS
6&8	DSR/CTS	20	DTR
5	Signal Ground	7	Signal Ground
4	DTR	6	DSR

PC-286 / **Apricot (Kyocera) Laser and Writer 15**

1	Frame Ground	1	Frame Ground
2	Transmit Data	3	Receive Data
3	Receive Data	2	Transmit Data
7	Signal Ground	7	Signal Ground
5&6	CTS/DSR	20	DTR

CTS and DSR must both be high.

Qi / **Apricot (Kyocera) Laser**

1		1	Frame Ground
2	Transmit Data	3	Receive Data
3	Receive Data	2	Transmit Data
4	RTS	5	CTS
5&6	DSR/CTS	20	DTR
7	Signal Ground	7	Signal Ground
20	DTR	6	DSR

1.16.3 Serial Cables for PS8/2 Laser Printers

Xen-ior Xen-S (9 pin female)   **PS8/2 (25 pin male) (WC40100)**

2	Receive Data	2	Transmit Data
3	Transmit Data	3	Receive Data
5	Signal Ground	7	Signal Ground
6&8	DSR/DTR	20	DTR

Qi (25 pin female).   **PS8/2 (25 pin male) (WC44100)**

2	Transmit Data	3	Receive Data
3	Receive Data	2	Transmit Data
4	RTS	5	CTS
5	CTS	4	RTS
6&8	DSR/DCD	20	DTR
7	Signal Ground	7	Signal Ground
20	DTR	6&8	DSR/DCD

PC286 (25 way male)   **PS8/2 (25 pin male)**

3	Receive Data	2	Transmit Data
2	Transmit Data	3	Receive Data
4	RTS	5	CTS
5	CTS	4	RTS
7	Signal Ground	7	Signal Ground
6&8	DSR/DCD	20	DTR

Xen (25 pin male)   **PS8/2 (25 pin male)**

1	Frame Ground	1	Frame Ground
2	Transmit Data	3	Receive Data
3	Receive Data	2	Transmit Data
4	RTS	5	CTS
5	CTS	4	RTS
6&8	DSR & DCD	20	DTR
7	Signal Ground	7	Signal Ground
20	DTR	6&8	DSR & DCD

The label sector of the Xen boot disk must be set to the correct baud rate, parity, data bits and stop bits and hardware handshaking should be set. Use WCONFIG within Windows to set these parameters.

1.16.4 Synchronous Comms Port Splitter Cable

The Qi Synchronous Comms port comprises of two independent serial interface channels which are brought out of the Qi via a single 25 way male D-type connector. The splitter cables below have a single 25 way female D-type connector which plugs into the Qi Synch Comms port and at the other end two 25 way D-type connectors, one for each of the two independent serial interface channels.

If you require to use a standard Quad card cable for linking two Xenix terminals, use the first of the two specifications, for use with standard serial cables for MS-DOS devices such as printers use the second specification on the following page.

The two 25 way connectors should be treated as normal serial ports, ie another cable is required to connect to a device.

For Xenix terminals using standard Quad card cables.

25 way female D   25 way female D #1   25 way female D #2

```
 1 -------------------------- 1 ---------------------- 1
 2 -------------------------- 3
 3 -------------------------- 2
 4 -------------------------- 5
 5 -------------------------- 4
 6 ----------------------- 20
 7 -------------------------- 7 ---------------------- 7
 8 -------------------------- 8
12 ---------------------------------------------------- 8
13 ---------------------------------------------------- 4
14 ---------------------------------------------------- 3
15 ----------------------- 17
16 ---------------------------------------------------- 2
17 ----------------------- 15
19 ---------------------------------------------------- 5
20 ----------------------- 6
22 ----------------------- 22
```

For MS-DOS devices with standard serial cables.

25 way female D   25 way male D #1   25 way male D #2

```
 1 ------------------------- 1 ----------------------- 1
 2 ------------------------- 2
 3 ------------------------- 3
 4 ------------------------- 4
 5 ------------------------- 5 -------------------------
 6 ------------------------- 6
 7 ------------------------- 7 ----------------------- 7
 8 ------------------------- 8
12 ----------------------------------------------------- 8
13 ----------------------------------------------------- 5
14 ----------------------------------------------------- 2
15 ------------------------ 15
16 ----------------------------------------------------- 3
17 ------------------------ 17
19 ------------------------ 4
20 ------------------------ 20
22 ------------------------ 22
```

1.17 XEN-i 286 (12.5 MHz Xen-S style)

1.17.1 1Mb Memory Module for XEN-i 286 (XB9916)

Please that the above product is for the old Xen-i 286 machines (PC/S), and not the current model which is Xen-s compatible.

1.17.2 AEMM on XEN-i 286

The newly redesigned XEN-i 286 machines will not work with AEMM.SYS Vb4.00.0 which is the latest version released. Version 4.00.1 is currently being tested and will be available in the near future and released as standard on Rel 3 of the Qi and Xen-S MS-DOS disks.

1.99.3.1   Apricot Extended/Expanded Memory Utilisation

This document is intended to clarify the use of Extended/Expanded
memory on the Apricot XEN-i range of computers.

Memory Definitions

Standard Memory

Standard memory is memory below 1 megabyte that is addressable by the CPU in
its real mode. MS-DOS uses memory up to 640k. The area between 640k an 1
Meg is used by the ROM BIOS and other optional ROM and RAM such as
video displays.

Extended Memory

Extended memory is memory that appears in the CPU address range from 1
- 16 Megabytes. Memory in this range is only accessible by the 80286
CPU in its protected mode of operation or by using the undocumented
LOADALL instruction.
Extended memory is supported by the IBM ROM BIOS Interrupt 15h
function which allows copying of blocks of extended memory to/from
standard memory.

Expanded Memory

Expanded memory is also know as above memory or LIM (Lotus Intel
Microsoft) memory. Expanded memory does not appear in the standard CPU
address map but is memory that is mappable using a hardware memory
mapper into the MS-DOS addressable memory between C000:0 and E000:0.

Hardware

Extended Memory

All Apricot XEN-i 286 and 386 machines support extended memory. The
386 machines may have up to 8 megabytes on the mother board. XEN-i 286
machines may have up to 2 megabytes on the motherboard either using
CRAM cards (squirrel) or 1 megabyte daughter boards (cheetah).

The Apricot AM card can be used in extended memory mode to provide RAM
in the range 1   16 meg. This is completely transparent to the
software except for a reduction in performance compared to using
motherboard RAM.

Expanded Memory

Apricot XEN-i 286 machines have built in memory mapping hardware. This allows the memory between 640k and 1 or 2 megabytes to used as Expanded memory using the AEMM.SYS device driver.

Note:

There is a potential conflict here as this memory also appears as Extended memory which may be used by other device driver such as RAMDRIVE.SYS used with th /e switch. This is resolved in the latest version of AEMM.SYS by reporting 0 expanded memory available through the Int 15h ROM BIOS interface.

Apricot XEN-i 386 machines have no provision for hardware expanded memory mapping on the motherboard. AEMM386 provides a LIM 3 spec software emulation.

Expanded memory is supported by a software device driver which provides an Int 67h interface. All applications such as RAMDRIVE and Lotus 123 use this software interface.

AM Card

The Apricot AM card may be used in Expanded memory mode with any IBM AT compatible machine. The AEMM.SYS device driver is the only software that will support the AM card in this mode (excluding AMLOAD for the moment).

Software

This is a brief description of the software that makes use of Extended/Expanded memory.

AEMM.SYS

This is the Apricot version of the Lotus Intel Microsoft (LIM) specification Expanded memory device driver. It is implemented to LIM specification version 4.0. Although it is not a complete implementation it supports all known software including Microsoft Windows 2.03. This driver will support the mapping hardware on all Apricot 80286 machines and the Apricot AM card in expanded memory mode.

AEMM386.SYS

This device driver emulates expanded memory mapping hardware using the 80386 Virtual 86 mode of operation and the 80386 page mapping facility. This emulation is to the LIM 3.0 specification and as such will not support Windows 2.03 expanded memory features.

AMLOAD.EXE

This software was designed for use in conjunction with specific pieces of network software to overcome the 640k memory constraint. It loads and executes software in the area between 640k and 1 Megabyte. Memory for this purpose is found from one of three places:-

a)   On 386 machines hardware support is provided to switch in RAM in the 640k to 1 megabyte area. This RAM would otherwise be unused.

b)   On 286 machines with more than 640k of motherboard memory some of this memory may be mapped into the area between C000:0 and E000:0. This is the same hardware used by AEMM.SYS.

c)   AM card memory may be mapped in as in b) above.

SERVER.SYS

This device driver is specific to the Apricot network system. It tells MS-DOS that it has up to 960k of memory available and replaces the Int 10h ROM BIOS video support functions. Bank switch techniques are then used to switch RAM/Video in and out as required.

RAMDRIVE.SYS

RAMDRIVE.SYS is the standard Microsoft RAM drive device driver. It can use either Standard, Extended or Expanded memory for device data.

SMARTDRIVE.SYS

SMARTDRV.SYS is a Microsoft disk cache device driver. It can use either Extended or Expanded memory for cache buffers.

Windows 2

Microsoft Windows 2 will use Expanded memory if it is supported by a LIM 4.0 specification device driver. Windows will load both code and data into expanded memory.

Windows/386

Microsoft Windows/386 will not use Expanded memory but requires
Extended memory. A LIM emulator (similar to AEMM386) is built in to
Windows/386 to allow applications (either Windows apps or old apps
such as Lotus 123) to use the expanded memory interface. Microsoft
recommend a minimum of 2 Megabytes of memory for Windows/386

Excel

Excel will use Expanded memory to store spreadsheet information. Excel
only requires LIM 3.0 support.

Windows/386 and RAMDRIVE.SYS/SMARTDRV.SYS

Windows/386 will coexist with the versions of RAMDRIVE.SYS and
SMARTDRV.sys supplied. SMARTDRV uses 256k of extended memory be
default which is fine. RAMDRIVE should be used with the following
command line to give a 256k RAM disk in extended memory.

        DEVICE=RAMDRIVE.SYS 256 /E

Windows/386 and AMLOAD

Windows/386 may be used in conjunction with AMLOAD.EXE. On a
monochrome system the way to do this is as follows:-

Invoke AMLOAD for the first time with the following command line:-

        AMLOAD /M:C000,E000 XPORT.EXE

Insert the following line in the WIN.INI file:-

        LASTEMMSEG=0F000

This will allow AMLOAD to use memory between C000:0 and E000:0.
Windows/386 will provide a 64k EMM window at E000:0 for use by
programs such as EXCEL.

Other Hardware

Extreme care must be taken when assigning memory in the area C000:0 to
F000:0 as many network cards and other add in boards have shared
memory or ROM's in this area. Most of these boards are detected by the
software and conflicts avoided. There are however exceptions to this
one of which is the IBM Token Ring card. This has shared memory which
due to its strange address is not detected by the software. This is
documented in the Windows/386 README.DOC.

Suggested Configurations

XEN-i 286 1 Meg
AMCARD 1 Meg

Use AEMM.SYS to give 1.3 Meg of expanded memory.
Use SMARTDRV to provide disk cache for enhanced performance.
Windows 2 will grab memory from SMARTDRV when required.
LIM 3 Aplications eg. LOTUS 123 or EXCEL will not have any expanded
memory available.

Windows 2	device=AEMM.SYS
AEMM.SYS	device=SMARTDRV.SYS /a
SMARTDRV	

As above but restrict SMARTDRV to 256k giving 1+ Meg of expanded
memory to LIM 3 applications.

Windows 2	device=AEMM.SYS
AEMM.SYS	device=SMARTDRV.SYS 256 /a
SMARTDRV	
EXCEL	

As above but allow AMLOAD of some network software by restricting AEMM
to a 64k page frame and reserve some pages for AMLOAD.

Windows 2	device=AEMM.SYS /p:4 /r
AEMM.SYS	device=SMARTDRV.SYS 256 /a
SMARTDRV	AMLOAD XPORT.EXE
EXCEL	etc
AMLOAD	

XEN-i 386 2 Meg

Allow LOTUS to use 1 Meg of expanded memory

| AEMM386.SYS | device=AEMM386.SYS |
| LOTUS | |

Allow EXCEL to use 1 Meg of expanded memory. Windows will not
currently use this. (Apricot will supply LIM 4 spec AEMM386.SYS in the
near future).

AEMM386.SYS	device=AEMM386.SYS
Windows 2	
EXCEL	

As above but AMLOAD some network software.

AEMM386.SYS   device=AEMM386.SYS
Windows 2   AMLOAD XPORT.EXE etc
EXCEL
AMLOAD

f000:0	————
	Ethernet
ee00:0	————
ec00:0	————
	Windows/386 LIM
dcoo:0	————
	AMLOAD
c800:0	————
	VGA ROM
c000:0	————

AMLOAD XPORT.EXE /M:c800,dc00

Questions and Answers

Q. Can I use AEMM386 and Windows 2 to take advantage of extended
memory on my 2 Megabyte XEN-i 386.
A. No. AEMM386 only provide LIM 3 emulations, Windows 2.03 requires
LIM 4 emulation.

NOTE: There may be a LIM 4 version of AEMM386 in the future.

Q. Can I use Excel with AEMM386 and Windows 2 to take advantage of
extended memory on my 2 Megabyte XEN-i 386.
A. Yes. Excel only requires LIM 3 emulation.

Q. Can I use AMLOAD in conjunction with Windows/386.
A. Yes. If you require LIM emulation for applications such as excel
and Lotus 123 then there must be at least 64k free memory between
C000:0 and E000:0. AMLOAD must be used with the /M switch to specify
the memory area to be used.

For example:
    AMLOAD /M:C000,D000
 or AMLOAD /M:D000,F000

Q. Can I use AMLOAD in conjunction with AEMM.SYS.
A. Yes. On 386 machines this is not a problem.

On 286 machines however AMLOAD and AEMM both use the same mapping
hardware and memory. Two switches must be used to AEMM.SYS.
[/P:C000,4] tells AEMM to provide 4 16k pages between C000:0 and
D000:0. [/R] tells AEMM to reserve some pages of physical memory for
use by AMLOAD. AMLOAD will automatically take advantage of this with
no extra switches required.

Q. Can I use Windows/386 with 1 Megabyte of memory.
A. It is advisable that you use Windows 2. On Xen-S and Qi it is possible to run Windows 386 using
the ROM Bios Shadowing facility, but this still leaves little memory for applications you will run.

Q. Can I use AEMM386 and Windows/386
A. No. There is no point, Windows/386 provides the equivalent
functions to AEMM386.

Windows 386 Expanded Memory.

When Windows is loading, it checks segments C000 to E000 for any ROM or RAM which may be
present. If a continuous 64K address range which starts on a 16K boundary is found to be empty,
then Windows 386 will use this as its EMM page frame via the 80386 paging mechanism. Any
additional 16K pages directly above this page frame are also included if they are contiguous. The
minimum number of 16K pages is 4 and the maximum is 8.

A Hercules or CGA card installed in the machine results in the page frame starting at C000 segment
with 8 physical pages. To AMLOAD into RAM from address C000 to DFFF:F (128K) insert the
lastemmseg=0f000 in the [WIN386] entry of the WIN.INI file. This will force the page frame to start
at E000 with 4 physical pages.

An EGA (QuadRAM and Paradise) card installed in the machine results in the page frame starting
at C400 with 7 physical pages (C400 to E000). To AMLOAD into RAM from D400:0 to EFFF:F
(112K), set lastemmseg=0D400. This will reduce the number of physical EMM pages to 4.

On Paradise VGA cards the EMM page frame starts at CC00 even though the ROM ends at C600.
This is due to the presence of a special RAM area on the VGA card between C600:0 to C800:0 which
causes the Windows386 EMM search code to step over the C800 page boundary and set the start
segment at CC00 with 5 physical pages. To AMLOAD into RAM from DC00: to EFFF:F (80K),
set lastemmseg=0DC00.

The E000 to F000 address range is always available to AMLOAD if the default lastemmseg is used
(ie. the lastemmseg entry is omitted from the WIN.INI file)

1.99.4   Current ROM revision levels

The current ROM revision levels for the various computers are detailed below:

NOTE: All 386 machines now have the SCSI version of the ROM's

Computer	Version
XEN	VR3.1.6
XEN-i 386/30	VR1.2.1
XEN-i 386/45	VR1.2.1
XEN-i 386/50 (Tower)	VR1.2.1
XEN-i 386/100 (Tower)	VR1.2.1
VX 386 AWS	VR1.2.1
VX 70S	VR1.2.1
VX 70	VR1.2.1
VX 150	VR1.2.1
VX 300	VR1.2.1
XEN-i Xi20	VR1.2.1
XEN-i XD20	VR1.2.1
XEN-i XD45	VR1.2.1
XEN-i AWS	VR1.2.1
Xen-i 286 (PC/S) range	VR1.2.1
PC286	VR1.2.1
QI (300 series)	1.02.06
XEN-S	1.2.7

All the above are available from Apricot Computer Services.

1.99.5 Cross Reference Chart of Current Range.

FEATURE/MACHINE	XEN-I 286 30	XEN-I 286 45	XEN-I 386 45	XEN-I 386 50	XEN-I 386 100	VX 70	VX 150	VX 300	VX WS	VX AWS	VX AWS/E	VX 386 AWS	VX 386 AWS/E
PROCESSOR	80286	80286	80386	80386	80386	80386	80386	80386	80286	80286	80286	80386	80386
CLOCK SPEED (MAX)	10MHZ	10MHZ	16MHZ	16MHZ	16MHZ	16MHZ	16MHZ	16MHZ	10MHZ	10MHZ	10MHZ	16MHZ	16MHZ
WINCHESTER STANDARD	30MB	46.6MB	46.6MB	46.6MB	104MB	66MB	147MB	247MB	NA	NA	NA	NA	NA
OPTIONAL 66MB SCSI	OPT	OPT	OPT	NA	NA	OPT	OPT	OPT	NA	NA	NA	NA	NA
147MB SCSI	OPT	OPT	OPT	AW	AW	OPT	OPT	OPT	NA	NA	NA	NA	NA
247MB SCSI	OPT	OPT	OPT	AW	AW	OPT	OPT	OPT	NA	NA	NA	NA	NA
46.6MB RLL	OPT	NA	NA	OPT	OPT	NA	NA	NA	NA	NA	NA	NA	NA
101MB RLL	NA	NA	NA	NA	OPT	NA	NA	NA	NA	NA	NA	NA	NA
WORM DRIVE 800MB	NA	NA	NA	NA	NA	OPT	OPT	OPT	NA	NA	NA	NA	NA
FLOPPY DISK DRIVES													
INTERNAL 3.5"	1.44MB	1.44MB	1.44MB	1.44MB	1.44MB	1.44MB	1.44MB	1.44MB	NA	1.44MB	1.44MB	1.44MB	1.44MB
or	or	or	or	or	or	or	or	or		or	or	or	or
INTERNAL 5.25"	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB	1.2MB	NA	1.2MB	1.2MB	1.2MB	1.2MB
EXTERNAL 3.5"	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EXTERNAL 5.25"	OPT	OPT	OPT	NA	NA	OPT	OPT	OPT	NA	OPT	OPT	OPT	OPT
TAPE STREAMER INTERNAL 125MB	NA	NA	NA	OPT	OPT	OPT	OPT	OPT	NA	NA	NA	NA	NA
EXTERNAL 60MB	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT
EXPANSION SLOTS INTERNAL	3	3	3	10	10	3	3	3	3	3	3	3	3
EXTERNAL	3	3	3	NA	NA	3	3	3	3	3	3	3	3
RAM (STANDARD)	1MB	1MB	1MB	2MB	2MB	2MB	2MB	2MB	1MB	1MB	1MB	1MB	1MB
RAM (EXPANSION)	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT
ON-BOARD EXPANSION	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT
AM BOARD (Not Xenix 386)	OPT	OPT	NA	NA	NA	NA	NA	OPT	NA	OPT	OPT	NA	NA
1MB ON MEMORY MODULE	OPT	OPT	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA
REAL TIME CLOCK	STA	STA	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT
MICROSCREEN KEYBOARD	OPT	OPT	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA
ATE KEYBOARD	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA
PARALLEL PORT	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA
SERIAL PORT	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA
MATHS CO-PROCESSOR 80287	OPT	OPT	NA	NA	NA	NA	NA	NA	OPT	OPT	OPT	NA	NA
80387	NA	NA	OPT	OPT	OPT	OPT	OPT	OPT	NA	NA	NA	OPT	OPT
NETWORK INTERFACE													
ON-BOARD OMNINET	STA	STA	STA	NA	NA	NA	NA	NA	STA	STA	STA	STA	STA
OMNINET I	NA	NA	OPT	OPT	OPT	OPT	OPT	OPT	NA	OPT	OPT	OPT	OPT
OMNINET II	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	NA	STA	STA	STA	STA
ETHERNET	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	NA	STA	STA	STA	STA
CGX OMNINET I	TP-IBM	TP-IBM	TP-IBM	TP-IBM	TP-IBM	TP-IBM	TP-IBM	TP-IBM	TP-IBM	TP-IBM	TP-IBM	TP-IBM	TP-IBM

Feature/Machine	XEN-I 286	XEN-I 286	XEN-I 386	XEN-I 386	VX	VX	VX	VX	VX	VX	VX 386	VX 386
	30	45	50	100	70	150	300	WS	AWS	AWS/E	AWS	AWS/E
MONITORS												
14" VGA COLOUR (640X480)	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT
14" PAPER WHITE (640X480)	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT
12" MDA MONOCHROME	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT
(720X350)	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT
12" MDA PAPER WHITE (720X350)	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT
19" HIGH RESOLUTION MONO	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT
SERIAL CARDS												
QUAD BOARD	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT
CHASE AT4, AT8, AT16	5	5	5	5	5	5	5	5	5	5	5	5
MODEM CARDS												
TRIPLEX (V21/V22/V23)	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT
APRICOT MODEM (V2)	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT
IBM-AT COMPATIBLE	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA
APRICOT MOUSE	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT
MICROSOFT MOUSE	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT	OPT
POWER SUPPLY (WATTS)	65W	120W	200W	200W	100W	100W	100W	50W	65W	65W	12W	12W
MICROSOFT WINDOWS	STA	STA	STA	STA	STA	STA	STA	NA	NA	NA	NA	NA

ABBREVIATIONS USED:

XE	Xenix only
OPT	Optional
STA	Standard
NA	Not Available
TP-IBM	3rd Party
	AT only
AW	Soon to be available

1.99.6 Invalid Setup-Problems Booting on MS-DOS 3.30

Models affected: Xen i / Xen XI / 286 / 386 / Tower / VX
With any Rom Release

Problem: If machine has lost or corruptted its setup it will only boot from a Dos 3.20 floppy disk not a 3.30 disk.

Fix: This is a known bug from Microsoft. Dos 3.30 looks at the CMOS and if the drive setup is invalid it tries four more times and if it still hasn't got the right setup info it stops after displaying "MS-DOS I/O SYSTEM VR 3.30.0 <DATE>" at the top of the screen.

Dos 3.20 does the same initial routine but after the fifth attempt at reading the CMOS if it still hasn't got the right info it reads the roms to see what is connected i.e. a floppy drive, and so boots from this.

It would appear to only affect high density disks so booting from a 720k or 360k Dos 3.30 disk will still work.

1.99.7 TS60/5 Tape Drive Installation & Configuration Notes

GENERAL

Card Installation

Insert the card in any available expansion slot either in the internal cage or the XP-I expansion box, making sure the jumpers are set to :-

DMA 3, INTERRUPT 3 and ADDRESS 330 (see diagram below)

These settings are suitable for both stand-alone and network operation.

Software Installation

Run the STINSTAL program on the Tape Operating System disk and follow the prompts entering the relevant disk drive and sub-directory details. When the software prompts for "SYSTEM" select **"AT with Phoenix BIOS"**, then run the STCONFIG program to change the DMA and Interrupt settings.

STAND-ALONE COMPUTERS

XEN-I 286/386-30's

The TS60/5 will work on these computers with no further installation necessary. All the features of the SYTOS software are supported.

XEN-I 286/386-45's and Towers

The hard disks fitted to these models have disk partitions greater than 32Mb. This imposes restrictions on how the TS60/5 can be used as the SYTOS software cannot support the larger capacity drives.

The restrictions are that certain facilities will not work, these are as follows :-

> STBATCH
> STCLOCK
> BIOS IMAGE COPY
> DOS DISK COPY
> LIBRARY

This means that only the FILE by FILE method of backup can be used.

When a tape is being restored the message **"Insufficient memory to hold disk FAT"** may be produced, this does not cause any problems.

NETWORKS

The TS60/5 can be installed on a network either attached to the file-server or a workstation. The machine to which the tape unit is connected must have an IBM compatible expansion bus.

Installed in a Server

To use the TS60/5 attached to a file-server the machine has to be booted as a stand-alone computer. The installation is therefore the same as a stand-alone computer and dependent on which model is being used as a file-server.

Installed in a Workstation

When the TS60/5 is installed on a workstation the NETWORK option in the STCONFIG utility needs to be set to YES if the file-server's disk is to be accessed for backup and restore purposes.

ADDRESS

DMA

INTERRUPT

■ = JUMPER
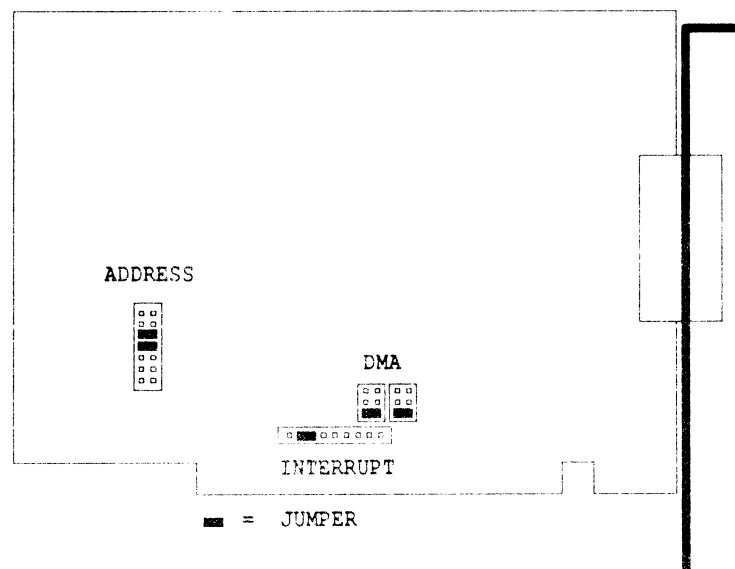
1.99.8 Prevention Of Mains Interference and Power Failure

Mains-borne interference and power failure can cause havoc with computer systems and is potentially disastrous to user data. Transient interference can be caused by switching a domestic appliance on or off, plant switching in a nearby factory, faults in mains distribution equipment or even a passing vehicle. Interference is harder to detect than mains failure but is usually less expensive to cure.

Ideally the interference should be stopped at source, though in most cases this is not practical. The alternative is to prevent the problem reaching the computer by filtering, conditioning or protecting against disconnection.

Fault Finding

Determining whether or not mains pollution is causing computer crashes is difficult to do cheaply. If you have never had a crash but wish to safeguard against one the problems are even greater. It helps to know how clean your mains supply is, and monitoring equipment can be purchased or hired to establish this. These instruments sense and record mains corruption; some give printouts detailing the type of interference with the intensity and time it occurred. Apricot use 'DRANETZ' and 'POWERSENSE' line analysers.

Slowly varying mains voltage and low voltage can be checked using a voltmeter. The reading should be within 6% of 240 volts, but before complaints are made the accuracy of the meter should be taken into account.

If your system continually crashes and mains interference is suspected, a simple D.I.Y detection method might work. Plug a mains powered AM receiver into the same power socket as the computer and listen for a crack or interference at the same time as the crash. Provided the lights do not flicker at the same time, this type of interference should be cured by the installation of a transient suppressor/ interference filter.

Most modern computer equipment (all Apricot equipment) use switch-mode power supply units which provide better resistance to pollution than equipment using linear supplies. Switch-mode supplies store more energy, and can often supply power during a brief mains drop-out. They can tolerate wider input voltage fluctuations than their linear equivalents, and are better at filtering high frequence interference.

Any computer should be capable of tolerating normal mains fluctuation, but long connecting leads and bad wiring can increase the variations. For these slower mains fluctuations or constantly low line voltage, a regulator or line conditioner would be required.

If the lights do flicker, this is not caused by interference but a momentary complete mains failure. The solution in this case would be an uninterrupitble power supply.

Filtering

Mains filters work by absorbing any fast changes in the supply voltage sine wave, including noise. They are particularly good at reducing radio frequency interference, and are found built into a mains plug or plug/socket combination.

Line Conditioners

In this group fall constant voltage transformers, regulators and conditioners. A constant voltage transformer or CVT can reduce a 15% supply fluctuation to between 1 and 5% while at the same time filtering a certain amount of noise and transients.

Better isolation from noise and interference is provided by a regulator, corrector or conditioner.

Many regulators include a low voltage transformer to feed an electronic converter, which steps the output voltage back up to 240V. The shape and amplitude of the output waveform is determined not by the input waveform but by the electronic circuit.

Uninterruptible Power Supplies

Where a computer drop-out cannot be tolerated, an uninterruptible power supply or UPS is required. There are many types and size of UPS, but they all perform the same function of continuing to provide mains power without interruption when the mains supply fails. Most UPSs use batteries and an electronic convertor to turn the low battery voltage into a.c. main voltage.

Of the two traditional UPS systems, on-line and off-line, generally the on-line system is seen to offer the most security and better line conditioning. In an on-line UPS the mains constantly drives the inverter during normal use. Passage from the mains through the rectifier and inverter of the UPS filtersout spikes and drops while cnarging the battery too. The battery supplies power to the inverter if the mains fall below a pre-set level.

Often the off-line system is described as not a truly uninterruptible supply. This is because the inverter has to be switched on if there is a power drop and does not operate during normal running. So the computer will see a short break (3-4 ms) as the inverter (driven by the battery) is switched in. Another criticism of this configuration is that, as the inverter is normally not in use, it is not being constantly tested. This means there is a danger that it will not operate when called upon to do so "in anger". However the off-line does have some considerable benefits. As no rectifier is needed, it is smaller and cheaper than the on-line type. And, as modern micro-computers are resilient to imperfections in the supply, they can be adequately protected by off-line systems if off-line filters are included.

If you consider that no chances can be taken with the data that you handle and have never experienced a failure, the problem becomes one of insurance. If you cannot afford to lose data but do nc. mind having the computer out of action until the mains comes back on, a small short-term UPS will suffice. Where computer time is expensive, as will be the case with multi-user systems, a long term auxiliary power supply might be the only solution. But as always, by far the cheapest way to prevent lost data through mains failure is to back up your working data frequently on to disc.

Equipment Power Rating

In order to recommend the correct rating of supply it is important to know the power consumption of all the devices to be connected to it. Detailed below is a list of the power supply rating of all Apricot machines, past and present, with some guide lines for power requirement calculation.

Apricot	PC	65	Watt
	XI	65	Watt
Apricot	F1	50	Watt
	F2	50	Watt
	F10	65	Watt
Apricot	Portable	50	Watt
Apricot	Xen FD	135	Watt
	HD	135	Watt
	CD	135	Watt
Apricot	Xen Diskless	50	Watt
Xeni	Diskless	50	Watt
Xeni	AWS	65	Watt
Xeni	VX WS	125	Watt

Xeni	VX AWS	125	Watt
Xeni	386VX AWS	125	Watt
Apricot	Xeni Twin	65	Watt
	HD	135	Watt
	Xi	65	Watt
	286	125	Watt
Apricot	Xeni 386	125	Watt
Xeni	386 VX	125	Watt
Apricot	DSU	100	Watt
Apricot	Xeni 386 Desk Side	125	Watt
Apricot	Qi	145	Watt
Apricot	P/White Monitor	0.5	Amp Nominal
	Green Wedge Monitor	0.25	Amp Nominal
	P/White Wedge Monitor	0.25	Amp Nominal
	VGA P/White Monitor	0.25	Amp Nominal
	CGA Colour Monitor	0.5	Amp Nominal
	EGA Colour Monitor	0.6	Amp Nominal
	VGA Colour Monitor	0.6	Amp Nominal

Note

The power dissipation quoted is for output power not input power. Switch-mode power supply units are 70% efficient.
Sum all the components to be connected to the power supply and add 30% for power supply losses.
Assuming a unity power factor the resultant power rating can be quoted as a VA rating.

Suppliers

The list below contains details of just a few of the suppliers of mains conditioners and UPS equipment trading in the UK. Their inclusion in this document is in no way a statement of recommendation or acceptance of their suitability to work with Apricot equipment. They do however provide a starting point for users, who a suffering from mains problems, to seek advice and possible solutions.

U.P.S Systems
Advanced Business Centre
Maid Marian Way
Nottingham
NG1 6HB

Geoff Bamford

Tel   0602 414500
Fax   0602 413820
Tlx   377844

Dowty Power Conversion Ltd
Brunel Road
Salisbury
Wiltshire
SP2 7PT

No Contact

Tel   0722 28801
Fax   0722 25673
Tlx   477064

Eccleston Electronics
Eccleston & Hart Ltd
8 Legge Lane
Birmingham
B31 3LG

Mike Eccleston

Tel   021 236 6220
         021 236 1226

Powerhouse Conditioning (UK) Ltd   Graham Mays
Wessex House
Meadow House   Tel   0344 860840
Osborne Lane   Fax   0344 860836
Warfield
Berks
RG12 6DY

Aztech Power Conditioners   No Contact
Ruston Electronics Ltd
15 Power Court   Tel   0582 459777
Luton   Tlx   827564
Beds
LU1 3JJ

1.99.9 Cross Reference Chart of Current Range.

Model groups: **Xen-l** (286/30, AWS) · **Xen-s** (200, 210, 250, 240x, Pc 30) · **Qi** (310, 330, 350, 650, 660, 660i) · **tower** (50, 100)

Category	Spec	286/30	AWS	200	210	250	240x	Pc 30	310	330	350	650	660	660i	50	100
System	Processor	286	286	386SX	386SX	386SX	386SX	386SX	386SX	386SX	386SX	386	386	386	386	386
	Speed (Mhz)	12.5	12.5	16	16	16	16	16	16	16	16	20	25	25	16	16
	Co-Processor	287 chip	287 chip	387SX daughter	387SX daughter	387SX daughter	387SX daughter	387SX daughter	Post rev B chip / Pre rev B daughter chip	Pre rev B daughter chip / Post rev B chip	Post rev B chip	387-20 chip	387-25 chip	387-25 chip	387 daughter	387 daughter
Floppy	Internal	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	5.25 or 3.5	5.25 or 3.5
	External	5.25"	5.25"	5.25"		5.25"	5.25"	5.25"	5.25 (card)	5.25 (card)	5.25 (card)	5.25 (card)	5.25 (card)	5.25 (card)	5.25 or 3.5	5.25 or 3.5
Memory	Standard	1 Mb	1 Mb	1 Mb	1 Mb	1 Mb	1 Mb	1 Mb	1 Mb	1 Mb	2 Mb	1 Mb	1 Mb	1 Mb	2 Mb	2 Mb
	Motherboard Expansion Max	5 Mb	5 Mb	5 Mb	5 Mb	5 Mb	5 Mb	5 Mb	None	None	None	16 Mb	16 Mb	16 Mb	8 Mb	8 Mb
	640k-1Mb Shadow feature	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
	640k-1Mb for AMLOAD	192k	192k	192k	192k	192k	192k	192k	128k	128k	128k	128k	128k	128k	140/160k	140/160k
Hard Disk	Motherboard support for HD Controller	RLL	No	No	No	RLL	No	RLL	No	No	No	No	No	No	RLL	RLL
	Expansion Slot HD Controller	No	No	No	No	No	SCSI	No	RLL	RLL	RLL	RLL	RLL	RLL	No	No
	HD Capacity	30 Mb	....	....	....	47 Mb	44 Mb	30 Mb	47 Mb	47 Mb	47 Mb	47 Mb	65 Mb	118 Mb	47 Mb	100 Mb
	Avg Access Time	68 ms	....	....	....	28 ms	25 ms	68 ms	....	28 ms	28 ms	28 ms	30 Ms	16 ms	28 ms	27 Ms
	Opt. 2nd Internal HD	No	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes
Expansion Slots	Expansion Type	AT	AT	AT	AT	AT	AT	AT	MCA	MCA	MCA	MCA	MCA	MCA	AT	AT
	Expansion Width	16 Bit	16 Bit	16 Bit	16 Bit	16 Bit	16 Bit	16 Bit	16 Bit	16 Bit	16/32 Bit	16/32 Bit	16/32 Bit	16/32 Bit	16 Bit	16 Bit
	Free Slots	3	3	3	3	3	2	3	4	3	3	3	3	3	9	9
	Slot Size	1/2 card	1/2 card	1/2 card	1/2 card	1/2 card	1/2 card	1/2 card	Full Length	Full Length	Full Length	Full Length	Full Length	Full Length	Full Length	Full Length
	Xp-I Expansion Box	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	Yes	Yes
Video	VGA Onboard	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
	Utility Software	AMODE	AMODE	AMODE	AMODE	AMODE	AMODE	AMODE	AMODE	AMODE	AMODE	AMODE	AMODE	AMODE	VGAplus	VGAplus
Miscellaneous	Special Comms Port	COM2	COM2	COM2	COM2	COM2	COM2	COM2	DSCC	DSCC	DSCC	DSCC	DSCC	DSCC	No	No
	Security	Password & Lock	Password & Lock	Password & Lock	Password & Lock	Password & Lock	Password & Lock	Password & Lock	Full	Full	Full	Full	Full	Full	Keyb Lock	Keyb Lock
	Internal Authorisation Key	2	2	2	2	2	2	2	2	2	2	2	2	2	No	No
	Keyboard Port	PS/2 Mini	PS/2 Mini	PS/2 Mini	PS/2 Mini	PS/2 Mini	PS/2 Mini	PS/2 Mini	PS/2 Std	PS/2 Std	PS/2 Std	PS/2 Std	PS/2 Std	PS/2 Std	AT Std	AT Std
	Mouse Port	COM2	COM2	COM2	COM2	COM2	COM2	COM2	PS/2 Mini	PS/2 Mini	PS/2 Mini	PS/2 Mini	PS/2 Mini	PS/2 Mini	Aprct Std	Aprct Std
Network	Ethernet Motherboard	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
	Opt. Ethernet Support	WD Card	WD Card	....	....	....	....	WD Card	....	....	....	....	....	....	WD Card	WD Card
	Ethernet remote boot 3.11	No	No	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No	No
	Opt. Omninet Support 3.11	Om 2 Card	Om 2 Card	Om 2 Card	Om 2 Card	Om 2 Card	Om 2 Card	Om 2 Card	Om 1 Card	Om 1 Card	Om 1 Card	Om 1 Card	Om 1 Card	Om 1 Card	Om 1 Card	Om 1 Card
	Omninet remote boot 3.11	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	No

2.1.2   Apricot MicroScreen Editor VR 1.1.0 17th July 86

This utility is for labelling the MicroScreen on XEN-i range machines. It will also be available on a future release of XEN software.

Correct Usage is:

    MS /E [d:][filename]

    MS [d:][filename]

    MS <keyNo> <MicroscrnText> <KeyAssignment[@]>

<KeyNo>	Number in the range 1 - 6.
<MicroscrnText>	Text to appear on MicroScreen must be contained within double quotation marks (max 6 characters).
<KeyAssignment[@]>	String to be assigned to a key must be contained within double quotation marks. The optional @ character will be replaced by a carriage return character (maximum 12 characters).

Note:

It is only possible to run MS.EXE once when loading a new MicroScreen layout from disk. (Second syntax above). Some applications software will itself use the MicroScreen and will overwrite any settings that the user makes.

Example :

    MS 1 "FRED" "A"

This displays the string FRED on the first key of the MicroScreen, and sets the key so that it generates a letter A.

2.1.3   Timebomb

As well as being suitable for installing copy protected software, the Timebomb program is useful when installing other software, notably Autocad.

2.1.4   Windows

If the Print option in the file menu is not available (displays in grey, rather than black), even though the printer has been installed correctly in CONTROL.EXE, this is caused by having too many entries in the DEVICE section of WIN.INI. The printer you are trying to install should be moved nearer the top of the list by editing WIN.INI with e.g. Notepad. Take a security copy of WIN.INI before doing this.

Windows normally only looks at the top 15 entries, and some applications look at less than that. The easiest thing to do is to move the printer you want to use to the top of the list.

2.1.4.1   Converting Text Files in Windows Write Ver 1.03 and 2.03.

Problem

When you save a converted Word document, that has been modified, and you use the 'SAVE' option the modifications are not saved and the file remains in a Word format. If the 'SAVE AS' option is used the modifications are saved, and the file is now in a Write format.

Solution

To permanently change a text file to Windows Write format, the following steps must be taken:

1. Open the text file in Write as usual.
2. Select the Save As command under the File menu.
3. In the dialogue box that appears, deselect the Text Only box and change the file extensioN to ".WRI".

After following these steps, the file will automatically be loaded in Windows Write format.

2.1.4.2 Windows 386 on Xen-i 386/30

There is insufficient memory (1Mb) to run Windows 386 on a Xen-i 386/30. Windows 2, which is also supplied, should be used unless additional memory is installed.

2.1.4.3 Windows 2

Problem

When a file has been created (e.g. in Windows Write), and the user returns to the MS-DOS Exec level in Windows, the file has not appeared in the directory. This does not happen in Windows 1.03.

Solution   (Supplied by Microsoft)

1.   Click on the drive letter you are currently logged on to. This makes the file appear.

2.   Minimise the MS-DOS EXEC. To make MS-DOS EXEC minimise when running APPS (EG, WRITE, Etc) Make an entry in 'WIN.INI' after the 'BEEP=' line which says :-

    MinimizeMSDos=yes

    or click on the minimize box in the 'ALT-file RUN box' which will put this line into 'WIN.INI'.

When you then run an APP and close after use the MSDOS-EXEC is theN restored and a re-read of the directory is executed causing any new files to bE displayed.

To remove the Minimize function, edit 'WIN.INI' or click on the minimize box in the 'ALT-file RUN box'.

2.1.5   Formatting of Winchesters on XEN-i systems

Introduction

This document details how the various format utilities format winchester disks and cope with media errors.

Please remember that formatting a disk destroys its contents, so take a security copy of any data or programs you wish to keep before formatting a disk.

The following utilities are described:

	Current version
HDFORM - Physical formatter	vc3.20.0
SFORM - SCSI physical formatter	vb1.1
FDISK - Partition utility	vc3.20.3
FORMAT - DOS User formatter	ve3.20.5

It is important to note that the type number of an ST506 or RLL winchester has to be set in the CMOS RAM before any formatting can proceed. These type numbers are listed at the end of the document.

The physical formatters HDFORM and SFORM are available to Apricot manufacturing, Apricot Computer Services, and approved repair centres **only.** Versions earlier than the above are not supported. The use of this software by any other individual or organisation is not supported, and no responsibility can be taken for the results.

HDFORM - Physical formatter

HDFORM is used to physically format ST506 and RLL winchesters. It allows bad tracks detailed by the manufacturer to be marked bad during the format process.It will also find new bad tracks during the format process and mark these bad. New bad tracks are found by verifying after formatting.

There is also an option for the program to find previously marked bad tracks before operating as above.

Version Vb3.20.0 sets the interleave factor to 1. This is invalid for Xenix systems, if using this version, overwrite the default interleave with a factor of 2.

Note

A track is defined as a particular head on a particular cylinder (e.g. Cylinder 3, Head 4).

SFORM - SCSI physical formatter

SFORM is used to physically format SCSI winchesters.

On SCSI winchesters there is no need to key in the manufacturers bad blocks as these are held internally. If supported by the drive, SFORM will do a certification pass which verifies that all the formatted areas of the disk are usable.

If the internally held drive parameters are corrupted a default set will be used when the drive powers up. However if the manufacturers bad block table is corrupted SFORM will not attempt to format the drive.

FDISK - Partition utility

FDISK is used to partition the winchester into up to 4 different sections. Each partition may contain a different operating system.

FORMAT - User formatter

FORMAT is used to user format the winchester (ST506 or RLL or SCSI). This means that the program builds the File Allocation Table (FAT) from the information it gains as it formats the drive. The FAT is essentially a link list of cluster numbers (A cluster is a number of sectors). If FORMAT finds sectors already marked bad it will not attempt to format but immediately map them out in the FAT. If it finds new sectors to be bad (by verifying after formatting) it will map the cluster containing this sector out in the FAT.

Sequence for formatting ST506 or RLL winchesters

1) Setup system for correct winchester type using SETUP

2) Physically format winchester using HDFORM

3) Create partition table using FDISK

4) Format winchester using FORMAT

Sequence for formatting SCSI winchesters

1) Physically format winchester using SFORM

2) Create partition table using FDISK

3) Format winchester using FORMAT

Notes for formatting SCSI winchesters

If SFORM is run without a certification pass (as on Rodime 70 Mb) it will format all sectors, (other than those specified by the manufacturer as bad) on the disk as usable without any verification. However these bad sectors will be found by FORMAT when it verifies after formatting. The clusters containing these sectors will then be mapped out in the FAT.

Currently supported winchester types

The winchester type number asked for by SETUP should be set to one of the following values.

Type 2   = 20 Mb MFM winchester drive

Type 3   = 30 Mb RLL winchester drive on a 386 product

Type 38 = 30 Mb RLL wincheste· drive on a 286 product

Type 34 = 45 Mb MFM winchester drive

2.1.6   MS-DOS 3.30 Features

Major features:

Performance improvements
Support for four COM ports
Support for more than 20 files per process
Fast commit file function
Extended national language support
International character set support
Enhancements to APPEND command
ATTRIB recurses through subdirectories
Batch file handling enhancements
Enhanced GRAPHICS command
Fail option added to the critical error handler

Features already covered by Apricot 's MSDOS 3.20 implementation:

Multiple MS-DOS partitions
DATE/TIME commands now update the CMOS clock
Support for 1.44Mb 3.5" disk drives.

Software changes:

The multiple partition feature is not compatible with Apricot's 3.20 implementation. This has the following effects :-

1)   FDISK has been significantly changed

2)   Upgrade procedure for users with multiple partitions under MS-DOS 3.20.

    a)   Backup all drive partitions using MS-DOS 3.20
    b)   Delete all partitions using Ms-DOS 3.20 FDISK
    c)   Reboot from MS-DOS 3.30 system disk
    d)   Use MS-DOS 3.30 FDISK to create required partitions
    e)   Format each disk partition, making the primary a system disk
    f)   Restore all information to winchester
    g)   Copy MS-DOS 3.30 and utilities to winchester
    h)   Reboot

3)   Drive name allocation has changed

MS-DOS 3.20	Drive	MS-DOS 3.30	Drive
Drive 0		Drive 0	
First primary partition	C:	Primary partition	C:
Second primary partition	D:	First logical partition	F:
Drive 1		Drive 1	
First primary partition	E:	Primary partition	D:
Second primary partition	F:	First logical partition	G:

4)   FORMAT no longer has Apricot style prompts to press 'W' before formatting a winchester etc. The following switches are however supported in addition to the IBM/Microsoft standard : /dd /hd /u. The 'WINDISK' feature under Windows is no

longer supported. The standard Windows format option should be used instead.

Machines supported:

MS-DOS 3.30 will only be supported on Apricot's range of IBM compatible computers.

Apricot Networks:

The network software will be upgraded to support a mixture of MS-DOS 3.20 and MS-DOS 3.30 workstations. There will no longer be a specific server version of IO.SYS for MS-DOS 3.30. This functionality will be provided by a loadable device driver called 'SERVER.SYS' which will be documented in a future bulletin.

2.1.6.1 AEMM.SYS Latest Version VR4.00.0 24th Feb 88

Changes since release version Vr3.20.3

1)   The device driver has been renamed AEMM.SYS from AMDRIVE.SYS.

2)   The mapping window has been increased from 4 to 8 pages. This is the maximum window size supported by the Apricot hardware.

3)   The maximum number of PID's has been reduced from 255 to 253. PID 0 is set aside by the LIM 4 specification as the system PID. PID 255 is used internally by the device driver. This restriction will not be noticed under normal conditions.

4)   A bug has been fixed in the map pages function. The old driver would not function correctly when used by two applications for example RAMDRIVE and LOTUS 123.

5)   The device driver should now correctly find all Apricot supported boards. A problem in the initialization could previously cause erratic behaviour.

6)   The driver now works correctly with Apricot AM cards installed in non Apricot machines.

7)   The sign on message now also reports the amount of expanded memory found in kilobytes. This is a more meaningful message.

8)   The '/P' switch is now implemented to specify where the page frame should reside.

/P:pppp[,n]
Specifies where the page frame should be located and how large the page frame should be.

pppp is the address of the required page frame in hex.
n is the number of 16k pages in the page frame. If the second parameter 'n' is omitted the page frame will be as large as possible.

If the first parameter 'pppp' is omitted the page frame is located as low as possible with the length being specified by the second parameter. eg. /P:,4.

eg. /P:D000,4 specifies that the page frame should be located at 0D000h and 4 pages   (64k bytes) long.

9)   The '/R' switch has been implemented to allow AMLOAD to be used along with EMM. This switch reserves some pages of expanded memory for use by AMLOAD.

/R
This switch specifies that the first 'n' pages of expanded memory should be reserved for use by AMLOAD.EXE. The value 'n' is the number of 16k pages available between the end of the page frame and 0E000H.

10)   The '/E' switch has been added to specify that AEMM should not use memory on the XE which would otherwise be available as extended memory between 1 and 2 Megabytes.

/E
This switch specifies that the EMM driver should not allocate the memory between 1 and 2 Megabytes if this memory is made up of CRAM extended memory boards. This allows other programs to use this extended memory eg. RAMDRIVE with the /E option.

11) The '/D' switch should now be used if full memory diagnostics are to be performed on initialization. This speeds up the loading of AEMM under normal use.

12) AEMM.SYS will now coexist with the Microsoft RAMDrive device driver revision 2.01 and later. This is done by using Int 15h to control the allocation of extended memory.

13) Information is now displayed on initialization as to the position and size of the page frame. This allows for easier diagnosis of possible clashes with network cards etc.

14) The driver now correctly sizes and avoids expansion ROM's. Previously only 16k ROM's (as on EGA) were correctly sized.

2.1.6.2 FDISK.EXE Latest Version VR 3.30.0 3rd Feb 88

Additional support to Microsoft Release Version

1) Support for partitions greater than 32 Megabytes

2) Display partition size in megabytes for information

Changes since Release Version Va3.30.0

1) Corrected message text

Release Version VR3.30.0

2.1.6.3 FORMAT.EXE Latest Version VR 3.30.0 3rd Feb 88

Additional support to Microsoft release version

1) Support of /U switch to update operating system

2) Add help screen

3) Support for greater than 32 megabyte winchester partitions.

4) Added /dd and /hd switches to specify type of disk to be formatted

5) Support smaller cluster sizes on large (> 32Mb) drives.

6) Removed /hd switch from help screen. This is the default.

Release Version VR3.30.0

2.1.6.4 MODE.EXE Latest Version VR 3.20.2 29th Mar 87

Changes since release version VR3.20 xx/06/86

1)   Mode redirection now works. Please note that only the parallel printer port can be redirected to a serial port. You cannot redirect one serial port to another or a serial port to a parallel printer port.

2)   Mode display options now work.

3)   Selecting baud rates can now be done by specifying the first two digits only, eg 12 is sufficient for selecting 1200 baud.

Changes since Release Version VR 3.20.1 7/7/86

1)   A help screen is displayed if the user enters an invalid command line.

2)   The Interrupt 19h (soft reboot) handler has been corrected (it used to terminate by issuing an INT 19 instead of INT 19h).

3)   The COM port setup now allows the user to set 19200 baud.

4)   The XEN-i 386 speed storage locations in CMOS RAM are now 3Eh and 3Fh - must use XEN-i 386 ROM's dated 19th Mar 87 or later.

5)   Build Problems corrected - errors in loading resident portion cured (e.g. MODE LPT1=COM1 gave internal error message).

2.1.6.5 MOUSE.SYS Latest Version VR 3.30.0 5th Feb 88

Changes since Release Version Vf3.30.2 26th Feb 87

1)   Mouse now works correctly on the PC 286.

Changes since Release Version Va 3.20.4

2)   Access to interrupt controllers (PIC's) is now done with interrupts disabled as per IBM Technical Reference manual.

3)   Improved error and interrupt handling.

Changes since Release Version Vb 3.20.4

1)   Improved perforamce to aid operation with Windows/386.

2)   Added new Int 33h call to support Windows/386

Changes since Beta Release Version Vc3.20.4

1)   Support added for VGA card. Microsoft Word 4.0 now displays a mouse cursor.

Release Version VR3.30.0

2.1.6.6 MSCALC.SYS Latest version VR 3.30.0

Previously documented in Technical Bulletin 15

Changes since Release Version VR3.20.5

1)   Dead key accents now work correctly on the French ATE keyboard.

2)   A new switch /NOANSI is now supported. This effectively dissables the ANSI.SYS driver built into MSCALC.SYS to allow applications to work which require ANSI.SYS to be unloaded. This provision also allows third party implementations of ANSI.SYS to be used in conjunction with MSCALC.SYS. To do this the following lines should appear in CONFIG.SYS

> DEVICE=ANSI.SYS
> DEVICE=MSCALC.SYS /NOANSI

Changes since Release Version Va3.20.6

1)   All accesses to the 8259 interrupt controllers are now protected in line with IBM's PS/2 Technical Reference Manual.

Changes since Release Version Vb3.20.6

1)   Support added for Turkish keyboards. The switch '/TR' specifies the Turkish keyboard table or a country code of 91 when MSCALC is loaded.

> COUNTRY=91
> DEVICE=MSCALC.SYS

2)   Some minor problems with supporting 101/102 key keyboards have been fixed.

3)   A new switch '/NONUMLOCK' or '/NON' is now supported which forces theNUMLOCK state to OFF when MSCALC is invoked. This is complementary to the'/NUM' switch.

Release Version VR 3.30.30

2.1.6.7 RECOVER.COM Latest Version VR 3.30.0 3rd Feb 88

Additional support to Microsoft Release Version:

1)   Support for 64K FAT size (32K entries).

Release Version VR3.30.0

2.1.6.8 SETUP.EXE Latest Version Vf 1.2.2

Previously documented in Technical Bulletin 15

Changes since Release Version VR1.2.1 19th Mar 87

1) Allows the setting of the Remote Boot option on PC/286 and VX Workstation machines.

2) /A switch required for ANSI switching. This can be used when using certain third party monitor boards that corrupt SETUP's display. The /A switch produces a clean display in these circumstances

Changes since Release Version Vd 1.2.2

1) Changed handling of CMOS RAM to avoid problems (As per IBM Technical Reference Manual).

2) Modified to work in OS/2 compatibility box.

3) Help screen and exit options are now available on the set time and date line.

4) The video adaptor selection now refers to EGA and VGA.

Release Version Vf1.2.2

2.1.6.9 TAPES.SYS Version Latest Version VR1.0.2

Changes since Release Version VR1.0.0

1) Fixed a bug which caused the machine to crash if a tape operation was started while the tape was being loaded by the drive.

Changes VR1.0.1 to VR1.0.2

1) Error codes returned to the application are now limited to those defined in the interface specification.

2) Support has now been included for the half height Tandberg tape drives.

3) Device names assigned to the devices found when the driver is loaded are now displayed.

4) The driver will now support multiple WORM drives. Previously the system would refuse to access the second drive.

Release Version VR1.02

2.1.6.10 TRESTORE.EXE Latest Version VR3.20.5

Changes since Release Version VR3.20.3

1) The utility now handles Control 'C' correctly. If Control 'C' is detected during the restore process then the current file will be restored and the process terminated.

2) Write protected files on the destination disk will now be overwritten to be compatible with the disk version of restore.

3) The user will be returned to his current working directory on completion of the restore operation.

4) The 'Q' Quit option is now allowed when the user is prompted for a tape to be inserted.

5) The text of error messages has been clarified and now refer to WORM and TAPE as appropriate. The help text has also been improved.

6) The process for listing the archive files on a tape (tape directory) has been simplified.

7) Non root-relative file name specifiers are now correctly handled.

8) A problem which caused the "Null Pointer Assignment" message to be displayed has now been fixed.

9) The number of files restored is reported at the end of the restore operation.

10) Critical errors (Interrupt 24) are now handled and appropriate action taken.

11) The restore operation is terminated if the destination should become full.

Changes since Release Version VR3.20.4

1) The utility will now accept and handle correctly eight character archive file names. A problem introduced with VR3.20.4 would not allow these files to be restored. Compatibilty with VR3.20.4 is maintained.

Release Version VR3.20.5

2.1.7   Apricot Shadow Disk System

The Shadow disk system forms a major part of Apricot's fault tolerant computing strategy. It offers the user a high degree of protection from data loss as a result of winchester drive failure.

The Shadow disk software will form an integral part of the system software for the Apricot Xen-i 386/50 and 386/100 tower systems and Apricot VX systems running the MS-DOS operating system.

When used in conjunction with the Apricot VX-Net software the features offered are equivalent to Novell SFT Netware level 2.

Major features:

- Complete duplication of all information stored on a shadow disk system.
- Multiple drives may be shadowed.
- Operation is transparent to the user.
- Transparent recovery of data lost due to media defects.
- Allows uninterrupted operation if primary drive system fails.
- Allows duplication of information on single drive for protection against media defects and disk write errors.
- Works with all types of hard disk drive including SCSI, ST506 and RLL drives.
- May be used with a complete duplicate disk subassembly including power supplieS for improved fault tolerance.
- Simple installation
- Error logging allows user to be warned of potential problems with the drive system.

The Shadow drive system duplicates all information written to the primary disk onto a secondary disk unit. Data is normally read only from the primary drive. Should this be unsuccessful however the data will then be read from the secondary drive. This is completely transparent and will allow operation to continue even if the primary drive system fails totally.

Note :

This is **not** a substitute for backup. For instance, if a file is deleted, it will be dei the 'shadow' system as well.

Backups **must** still be made on a regular basis.

2.1.8   Windows 386

Minimum Hardware and Software Requirements

1)   XEN-i 386

2)   2Mb of RAM minimum.

3)   MSDOS 3.x

4)   IO.SYS ve 3.20.6 or later

5)   MOUSE.SYS vc 3.20.4 or later (to utilize Apricot keyboard mouse)

6)   Windows 386 may display a warning that the Intel 80386 present will not reliably execute 32-bit multiply operations. If you receive this message, contact Apricot Computer Services for further advice.

2.1.9   Increasing number of files that can be concurrently open in DOS 3.3

SET HANDLE COUNT (FUNCTION 67H)

Call:

AH=67H
BX=Number of allowed handles

Return:
Carry set: AX
Carry not set:
No error

Comments:

Function 67H increases or decreases the number of files a program can have open at one time. The maximum number of file handles is 64K. If less than 20 are specified, the minimum number, 20 is assumed. If this call is used to reduce the number of allowed handles, the new limit does not take effect until any handles above the new limit are closed.

The user should use Call 4AH (set Block) to allocate memory for the extended handle list it than 255. The maximum number for the value of the CONFIG.SYS command files is 255.

Function 4A is used to shrink the memory allocated to a program. DOS will allocate memory handle table. This must be done if BX is greater than 20. The maximum files allowed on the s 255. The absolute maximum per process is 255.

The original Microsoft "work-around" code for MS-DOS 3.20 said function 65H would perform this function. These programs will fail under DOS 3.30.

2.1.10   SYS.COM Vr3.30.0 or earlier

Problem

If SYS is used to transfer system tracks <u>onto</u> a hard disk which is larger than 32Mb, the hard disk will become corrupt when the machine is rebooted. All data will be lost.

Solution

Use FORMAT /U to update system tracks on hard disks larger than 32 Mb. The SYS program will be corrected in a future release.

2.1.11   Device Driver and TSR Interrupt Hooking Practices

In the IBM PC/MS-DOS environment programs may reboot the operating system by issuing an interrupt 19H - this effectively jumps into ROM which loads the boot sector in off disk etc, etc.

The ROM int 19H code assumes that all hardware and software interrupt are set up in the state they were in when the first boot took place - i.e. the system is 'clean'

To ensure that this is the case, the MS -DOS 3.X BIOS hooks in the int 19H vector on startup, and saves the state of the HARDWARE interrupt vectors at that time (ints. 8H to 0FH and 70H to 77H), these vectors are then replaced by the BIOS when an int 19H is issued.

This good deed by the BIOS means that any device drivers which hook hardware interrupts need not necessarily save these as the BIOS restores them automatically - there is, however, no save/restore of soft interrupts (e.g. int 33H or int 67H), it is up to the driver or TSR to save the vectors for these interrupts, and then restore them on receiving an int 19H.

All this boils down to one simple rule:

ALL DEVICE DRIVERS AND TSR'S (TERMINATE AND STAY RESIDENT) PROGRAMS UNDER PC/MS-DOS 3.X WHICH HOOK ANY SOFTWARE OR HARDWARE INTERRUPT VECTORS MUST SAVE THE STATE OF THOSE VECTORS ON ENTRY, AND RESTORE THEM WHEN AN INTERRUPT 19H IS ISSUED.

2.1.12 OS/2

Overview

. Multitasking operating system
. Will eventually provide standard graphics environment (Presentation Manager)
. Open architecture philosophy
. Breaks 640K barrier properly
. Does NOT replace DOS

Major Features

. Time slice, priority scheduling
. Multiple OS/2 applications, one DOS 3.n application
. Up to 16 Mb of physical memory
. Theoretically 1 Gigabyte virtual memory per process (at present 32Mb)
. Protection to prevent applications interfering with each other, based on features of Intel chips (protected mode).
. Dynamic linking at load time

Hardware Requirements

. Intel 80286/80386 processor
. At least 1.5Mb, 2Mb realistically.
. Hard Disk (recommend at least 20Mb)
. Floppy disk drive

Major differences from DOS

. DOS applications are strictly limited to 640K. i.e. no 'above-memory' access for large spreadsheets etc.
. No applications yet written
. Config.sys has additional commands and there are additional startup files.
. New commands in OS/2 in addition to those in MSDOS.
. Real mode is for old MSDOS programs, protected mode is for OS/2 applications.
. AUTOEXEC.BAT is used, as before, in Real Mode.
. Config.Sys and Autoexec.Bat are known as Config.Os2 and Autoexec.Os2 in Dual Boot mode

Unsupported Hardware Options in release 1.0

    VX system with SCSI drives
    PC286
    Any SCSI device
    Irwin tape drive
    Internal modems
    Quad card
    CHASE serial card
    Network cards

Other Unsupported Options in version 1.0

    VX/NET Networks
    System Fault tolerance

2.1.13 MS-DOS and Serial Baud Rates

MS-Dos 3.3 will only support MCA compatible serial ports upto 19200 Baud rate, IBM AT compatables are not supported above 9600. MS-Dos 3.2 however will support AT's at 19200.

2.2   Systems software - Apricot architecture - Single user

2.2.1   MS.EXE

This is a generic program, but is currently available on XEN-i disk packs only - see section 4.1.2.

2.2.2   Formatting 3.5 inch disks

If you intend to format 3.5 inch 720K IBM format disks on APRICOT architecture machines, you require BIOS 3.1 and FORMAT.EXE ver 1.5.3 or later for the /I switch to work. This is supplied with MFREL4 Server software ver 1.5.3 (9 September release), which has been supplied to all XEN Multi-User suppliers.

2.2.3   Windows Paint 1.03

This version of Paint produces blank lines across the middle of pictures when output to a printer. Microsoft are aware of this problem, and it will presumably be fixed in a future version. An interim solution is to use the version of Paint supplied with Windows 1.02.

2.3.6 Microsoft Rbase version 1.01

Database Management system. Features include :

- Compiler
- Application generator
- Prototyping system
- Password security
- User-defined data rules
- Automatic menu generation
- Time and date stamp in reports
- Data dictionary
- Data can be imported from dBase II, Lotus/Symphony, pfs:FILE, DIF etc.

2.3.7 Microsoft Chart version 2.0

Produces charts using data from Lotus, Multiplan, dBASE II, dBASE III etc. Features include :

- 8 chart types
- Custom charting capabilities
- Titles, axes labels, footnotes in up to 177 colours and 12 fonts
- Chart up to 128 data points
- Supports more than 60 output devices

2.3.8 VP-Planner Printers

See section 3.7.1

2.3.9 Apricot Accountant

Apricot Accountant is now sold and supported by PACT Associates.

Sales   -   021-503-0022
Support -   021-503-0800

2.3.10 Communications software outlines

Multicom

Viewdata package that also offers teletype (Micromail) emulation. Uses version II modem or Triple-x modem. Runs on IBM-architecture machines (i.e. Xen-i, Xen-i 286, Xen-i 386).

ISYNC

File transfer package compatible with the old Apricot ASYNC and File Transfer programs. Runs on IBM-architecture machines.

COMMUNIQUE

Provides access to electronic mail, telex, and information services for the non-technical user. Runs on both Apricot and IBM-architecture machines. The Xen-i (IBM-architecture) version does not support Viewdata (e.g. Prestel), Multicom should be used for this.

POLY-STAR

VT52,VT102,VT220,VT240 emulation. IBM-architecture only.

N.B. At present, these products do not work satisfactorily through a shared modem on a VX system.

2.3.11 Windows Terminal

When using the Windows application Terminal on IBM compatible systems please note that the Apricot integral modems Mk I, Ia, and II are **not** supported.

You must use an IBM hardware-compatible internal modem such as the Apricot Triplex, or an external Hayes compatible unit on COM1 or COM2

2.3.12   Supercalc 4 version 1.1

Problem

2.3-5

Supercalc 4 falsely detects the presence of a Hercules colour card on some IBM compatible video cards.

Symptoms

Unable to display a graph on screen although the message "GRAPHING" appears in the bottom right hand corner of the screen.

The system defaults concerning the screen type in the \GLOBAL,OPTIMUM options cannot be saved.

Solution

Debug the SC4.COM file from MS-DOS entering the highlighted text only as below :-

```
DEBUG SC4.COM
-EB155(cr)
XXXX:B155 C6.90(sp)06.90(sp)23.90(sp)
XXXX:B158 04.90(sp)03.90(cr)
-W(cr)
WRITING DB80 BYTES
-Q(cr)
```

Where   (cr) = carriage return
        (sp) = space bar

2.3.13 AUTOCAD with VGA Monitors

To run Autocad on computers with VGA monitors in VGA mode, a specific version of the software is required. This is Autocad version 9(PS2), note the PS2 suffix which has the VGA screen drivers.

2.3.14 Apricot Architecture to IBM Architecture Software Upgrades.

Prices quoted are available direct from the software house on return of the original Apricot Master Disks together with a cheque for the appropriate amount plus VAT. Carriage charges have been included.

Supplier	Apricot 3.5"	IBM 3.5" (720K)	Upgrade RRP	New Product RRP
Wordprocessing				
Microsoft	Word 2 or 3	Word 4		
0734-500741	Post 1/7/87		Free	395.00
	Pre 1/7/88		45.00	395.00
Micropro	Wordstar	Wordstar Prof 5.0	99.00	399.00
01-6438866				
	Wordstar 2000	Wordstar 2000	149.00	465.00
	Any Version	Release 3.01		
Sentinel	Wordperfect	Wordperfect	55.00	425.00
Software	4.1 or 4.2	5.0		
0932-231164				
Wordcraft	Wordcraft	Wordcraft 4.0	80.00	475.00
0206-561608	Wordcraft Elite	Wordcraft Elite	270.00	895.00
	+ Formmaster	4.0		
	Wordcraft Elite	Wordcraft Elite	105.00	895.00
	+ Imagemaster	4.0		
Spreadsheet				
Lotus	Lotus 123	Lotus 123	121.74	395.00
Development	version 1A	version 2.01		
0753-840281				
Computer	Supercalc	Supercalc 5	104.80	396.00
Associates	1, 2 or 3			
0753-77733				
Microsoft	Multiplan	Multiplan 3.03		
0734-500741	1 or 2 pre 1/12/86	40.00	150.00	
	1 or 2 post 1/12/86	Free	150.00	
Integrated				
Lotus	Lotus Symphony	Lotus Symphony	108.70	550.00
0753-840281	version 1.0	version 2.0		
		(v3.0 from Jan 89)		
Psion	Xchange	Xchange v1.37	75.00	495.00
01-7239408				
Database				
Ashton Tate	DBase II	DBase IV	281.00	595.00
0734-341310	DBase III	DBase IV	141.00	595.00
Compsoft	Delta 4	Delta 5	204.00	595.00
04868-25925				
Business	Cardbox Plus	Cardbox Plus 4	150.00	350.00
Simulations				
0892-863105				
Sapphire	Data Ease	Data Ease v2.53	145.00	595.00
01-5540582	Data Master	Data Ease v2.53	145.00	595.00

2.4 Languages

2.4.1 GWBASIC Compiler v.3.11.1 on XEN

2.4.1.1 Opening Devices as Files

The following program has been written to demonstrate a particular feature of GWBASIC which has been reported as a problem.

A feature of the GWBASIC compiler is that devices can be opened as files. The following program shows that opening a device as a sequential file has the effect of repeating the last character sent (in this case a carriage return). The program goes on to give two examples that produce the effect that might be expected. The first method is to open the device as a random file, and the second is to use the PRINT statement to output to the screen. LPRINT should of course be used for the printer.

```
10CLS
20 OPEN "o",1,"con"
30 PRINT #1,"Demonstrate the feature"
40 PRINT #1,"Demonstrate the feature - a line is skipped"
45 CLOSE #1
50 OPEN "r",1,"con",80
60 FIELD #1,80 AS A$
70 LSET A$="method number 1 - using random files"
80 PUT #1,1
90 PUT #1,2
100 CLOSE #1
170 INPUT P
180 CLS
190 PRINT "method number 2 - using print,not print #"
200 PRINT "method number 2"
210 INPUT p
```

2.4.1.2 GWBASIC PLAY statement

There has been a report that the PLAY statement in GWBASIC on a Xen only plays one note. This simple program shows how to prove otherwise.

```
10 X$="O3 G4 N34 L1"
12 X1$="O4 A- N45 L1"
20 PLAY X$
30 A$=INKEY$ : IF A$="" THEN 30
40 PLAY X1$
```

Another, more generalised approach is to set the MB parameter in the PLAY statement, which plays the music in "background" mode.

2.4.2 Microsoft FORTRAN V4.N

- GSA certified error-free full ANSI FORTRAN 77 Compiler
- Optimising compiler
- IBM VS mainframe and DEC VAX extensions and intrinsics
- Complete development environment
- Detailed diagnostics
- Multiple and mixed memory models
- Improved documentation

The mouse drivers supplied by Microsoft with this product are not suitable for use with the Apricot mouse in Codeview. The latest Apricot version should be used this is v c3.20.4, which is available on the latest disk packs.

2.4.3 Microsoft Basic version 6.0

This is an up-to-date version of Microsoft BASIC, which used to be (and perhaps still is) the most popular development language on microcomputers. Version 6.0 is greatly enhanced over the last version, 5.36, which was the last version to be available from Apricot.

Major features

- Supports both OS/2 Protected mode and Real (DOS) mode.
- OS/2 Language enhancements including multitasking and interprocess-communication features.
- OS/2 Development Tools including Codeview and Microsoft Editor.
- QuickBASIC 4.0 Compatibility including user-defined data types and SELECT CASE
- Customised Run-Time modules (dynamically linked in protected mode)
- QuickBASIC 4.0 is included. This is only suitable for real mode programs.
- Direct calls to OS/2 functions in protected mode.
- Dynamic arrays
- Support for multiple threads in external routines in protected mode.
- Enhanced error-handling. If an error occurs in a module that has no error handler of its own, Basic will look for an active error handler in the calling code.
- File and record locking features available in all modes. This is particularly important in real mode in a networking environment.

New statements and functions

ON SIGNAL	Defines an event trap for protected-mode signal
ON UEVENT	Defines an event trap for a user-defined event
OPEN PIPE	Executes an external process whose i/o is connected to your BASIC program. Protected mode only
SHELL	Executes another process without suspending BASIC program. Protected mode only.
SIGNAL ON, OFF, STOP	Enables, disables or suspends signal trapping. protected mode only.
SLEEP	Suspends execution of a BASIC program.
UEVENT ON, OFF, STOP	Enables, disables or suspends user event trapping.

In addition, there are numerous extensions and changes to existing statements, e.g. LOCK clauses in the OPEN statement.

to be added as section 2.5 page 2.5-1

2.5 Desktop Publishing

2.5.1 Pagemaker V1.0A

Question

I have a Xen with Windows, Pagemaker and a PS8 or PS8/2 and I am having problems printing.

Answer

Firstly to print from Pagemaker you must have Windows 1.03, also on a Xen you can not print at 9600 baud, this setting has to be changed through MS-DOS and on the printer (you can go up to 19200). Changing the parameters on the printer is explained on page 120 of the Laserwriter manual.

Question

I have upgraded from Windows V1.03 to Windows 2.03 and there are no icons in the pagemaker toolbox and no measurements in the rulers.

Answer

This is caused by the fonts having not been converted.
Use **NEWFON.EXE** at DOS level to convert the fonts **PMFONTA.FON, PMFONTB.FON and PMFONTE.FON.**

> Type:C>NEWFON PMFONTA.FON
> C>NEWFON PMFONTB: FON
> C>NEWFON PMFONTE.FON

2.5.2 Pagemaker V3.0

Question

I have just installed Pagemaker V3.0 which is supposed to support colour separation, however there are no colours allocated in the colour palette.

Answer

If there are no colours in the colour palette they must be mixed by going into the OPTIONS menu and using the DEFINE COLOURS option.

Question

I have just installed Pagemaker V3.0 with runtime Windows 2 and the mouse and key board drivers for the Apricot are not available

Answer

Mouse and keyboard drivers are not supplied in the box from Aldus, you will have to use the drivers **APMOUSE.DRV & APUK.DRV** from Windows 2.

Question

I have installed Pagemaker V3.0 to replace Pagemaker V1.0a, if I draw a line on top of a guide line, then the line disappears, this didn't happen on Pagemaker V1.0a

Answer

Pagemaker V3.0 now has an added feature which allows you to place the guidelines in

the foreground or the background, to do this you go into EDIT then select PREFERENCES within the selection box there is an option for GUIDES front or back

Question

If I select Auto Kerning I cannot notice any apparent change in the body of text

Answer

Auto Kerning is very difficult to recognise as it only affects certain letter combinations, if you were to put a W & A together then you should notice the difference with the A following the slope of the W

Question

When using Pagemaker on a 386 machine the Apricot mouse has erratic movement switching from Zoom view and back again

Answer

Within setup on the machine set the processor speed to 16mhz FAST I/O

2.5.3 Ventura

Question

When printing using downloadable fonts through Ventura it slows my system down dramatically.

Answer

As we do not sell downloadable fonts for Ventura, we can offer no support .

Suggestion

Refer to Ventura Manual **APPENDIX F - PRINTER INFORMATION**, page **F-22 Postscript prologue.**

2.5.4 Micrografx Designer

Question

When placing drawings into pagemaker using the **Place** option I encounter the following:-

a. Drawings too complex to place
b. The system Hangs
c. The patterns change
d. A percentage of the drawing disappears

Answer

The working area in designer is twice the size specified i.e. **A4 is actually A3.** Consequently when using the place function Designer automatically reduces the work area back to A4 which can cause problems due to the increase in information to be translated by Pagemaker.
A new version of Designer will be released shortly offering an alternative save option which will be as a Windows Meta File to combat this problem.

Suggestion

a) Instead of using the place function in Pagemaker, transfer drawings by copying to the clipboard and pasting into pagemaker.

b) Open the Designer PIC file under MSDraw and save under a new title. Now try to place this new Draw file into Pagemaker.

Question

How do I merge text into Designer?

Answer

When using the merge text option, the file chosen is copied firstly to the clipboard. it should then be pasted into the Text Editing box then using the update function will paste the file onto your designer page.

Question

I have bought Micrografx Designer. Enclosed in the package is a registration card to register with Micrografx in America, and offering a free copy of Clipart. Who do I register with and off whom do I obtain my free copy of Clipart.

Answer

You register with Micrografx in America and they will supply you with your free copy of Clipart.

Clipart can also be purchased from Apricot,Order Processing for £82.00.

Question

I am unable to print out rotated text in Designer.

I am unable to place and print out rotated text in Pagemaker.

Answer

This is a problem caused by the Postscript Driver. We are presently assessing a new postscript driver from Micrografx in America which will hopefully solve this problem.

2.6 Applications Questions and Answers

2.6.1 CLIPPER - Common Questions

Question

Can I use Dbase program compiled by Clipper on a Apricot PC/XI or Xen ?

Answer

There are screen and keyboard drivers for Apricot architecture machines. These are available from Nantucket (Tel. 0992 554621)

2.6.2 DBASE - Common Questions

Question

How do I install Dbase III on a network ?

Answer

As the present versions of Dbase III and Dbase III LAN pack are unprotected the installation process is quite simple and can be accomplished by doing the following.

1. Create an Application area and setup the relevant users permissions to use the area from within NETGEN.
2. Restart the network and Logon as a Dbase user on a workstation with a local floppy drive.
3. Run the Dbase Administrator installation routine from the floppy drive i.e.
    A>INSTALL x: DBA
    where X: is the drive on the hard disk where you want Dbase to go.
4. Once the Dbase Administrator has been installed run the "ADDUSER" program from the server to increase the user count using the Dbase LAN pack.
5. Using the "ATTRIB.EXE" make the file "DBA.OVR" read only.

The Dbase should now be ready for use.

2.6.3 EXCEL - Common Questions

Question

When I try to run Excel, whilst I am connected to my network, I get the message "Not Enough Memory to run Excel"

Answer

Make sure your Confg.sys file contains the line **device=aemm.sys /p:d000 /r** and you Autoexec.bat file contains the line **amload /m:c000,cfff minses.**

Question

When I format a cell or range of cells as currency (£'s) hashes appear between the "£" sign and the value ?

Answer

Make sure that the Currency character in the "WIN.INI" file is a "£" sign, not a hash.

Question
My mouse doesn't work with the runtime version of Windows supplied with Excel ?

Answer
Use the Mouse and Keyboard drivers supplied on the Excel Support Disk when initially installing Windows 2. This requires "MOUSE.SYS" version VR3.20.4 or greater.

Question
If I am using a spreadsheet a lot, I find random 2s, 4s, 6s or 8s apearing in the cells.

Answer
A problem has been found where if you use the arrow keys to scroll up and down the spreadsheet whilest the NumLock is on, random number appear. We believe that the fix for this is to use Windows 2.1 as shipped on the XEN-S Environment pack.

2.6.4 LOTUS 123 - Common Questions

Question
My postcript (PS8) printer is not printing properly.

Answer
The following procedure has been tested on Xen-i, Xen-S and Qi machines.
Copy LOTUSPS.SYS, SXX4POST.DRV, SXXBPOST.DRV and SIB3POST.DRV, to the root directory. Edit CONFIG.SYS to insert the line:-
        device=lotusps.sys 1 96 lpt3
Reboot your machine.

Write the text file below (begining and ending in CONTROL and D) and copy this down to the printer.
        ^D
        serverdict begin 0 exitserver
        statusdict begin 25 9600 0 setsccbatch
        ^D

Go into the subdirectory containing Lotus and run Install.
Goto Advanced options, then select Add new drivers to library, Modify current driver set. Port interface should be set to IBM PORT INTERFACE (PS). Save changes then go to main menu by pressing escape. Now go to First time installation or Change selected equipment. Set both Text printer and Graphics printer to POSTCRIPT. Save ,and quit.

In Lotus goto Worksheet, Global , Default , Printer , Interface and choose DOS DEVICE LPT3 (no 7 in list). Goto Name and choose POSTCRIPT, then Quit and Update.
Go into Printgraph Settings, Hardware, Interface and select DOS DEVICE LPT3
(no 7 in list) Now go into Printer and select POSTCRIPT POSCRIPT with the space bar, then Quit and Save

You should now be able to print with your postscript printer.

Question

How can I print a spreadsheet in landscape mode on a laser printer ?

Answer

If the printer emulates a HP Laserjet then the escape sequence to change the page orientation can be entered as follows :-

From the Lotus spread sheet main menu enter

Print
Printer
Options
Setup
\027&11O

The page lengths and widths will have to be changed.

Question

I am using Lotus 123 Release 2 with expanded Memory. I have used all 640K of my Conventional memory and even though I have plenty of Expanded memory left, I still get the error "Memory Full". What should I do ?

Answer

In order to access Expanded memory, you must have at least some conventional memory available to store "pointer" information for the data that is being put into Expanded memory. The three things that are stored in Expanded Memory are real number, formulae and labels. Once you use all of the Conventional memory, you will not be able to access any additional Expanded memory.

Extra Conventional memory can be gained by removing any unnecessary device drivers from "config.sys", such as "MODEMXXX.SYS" etc..

2.6.5 MULTIPLAN - Common Questions

Question

Can Multiplan display graphics ?

Answer

No. graphics can be produced if the data is loaded into Microsoft Chart.

2.6.6 SUPERCALC - Common Questions

Question

I went to view a graph in Supercalc 3 (on a Apricot architecture machine) and the computer hangs with the message "Divide Overflow" appearing on the screen ?

Answer

This occurs when GSX Graphics has not been installed prior to running Supercalc 3. Make sure that "GRAPHICS.EXE" is run first.

Question

When I try to display a graph using the Supercalc 4 the message "Graphing" appears on the screen but nothing happens ?

Answer

This is caused by Supercalc 4 version 1.10 falsely detecting the presence of a Hercules colour card on some IBM compatible video cards. This can be corrected by editing the "SC4.COM" program file with "DEBUG.COM" as follows :-

```
DEBUG SC4.COM(cr)
-EB155(cr)
XXXX:B155 C6.90(sp)06.90(sp)23.90(sp)
XXXX:B158 04.90(sp)03.90(cr)
-W(cr)
WRITING DB80 BYTES
-Q(cr)
```

```
where - (cr) = return
        (sp) = space
```

It is advisable to make a copy of "SC4.COM" before starting the Debug routine.

Question

When I view a graph on a computer with a Hercules/MDA monitor using Supercalc 4 the screen displays characters instead of lines.

Answer

This is caused by Superwriter not being configured for the correct type of video. The correct settings should be as follows :-

        /Global,Optimum,Video   - Hercules

/Global,Optimum,Attribute   - Black/White

and

/Global,Graphics,Options,Colour Monitor   - Black/White

These settings need to be saves, using the "Keep" option and Supercalc 4 re-loaded to read in the new configuration.

Question

I cannot print a graph to my Writer 26 (Brother 4018) on the parallel port using Supercalc 4 ?

Answer

Modify the cable so that pin 16 at the computer end is not connected.

Question

When I am installing the network version of Supercalc 4 the Activate program keeps asking for a password ?

Answer

The Activate program needs to know where to store the logfile Supercalc uses to keep track of the users on the system. If pathname this is entered incorrectly the software asks for a password.

When the Activate program is run it asks for the location of the "SC4.COM" file, enter this i.e. S:, the next prompts are for the paths to read and write the logfile. The syntax for this is :-

\\server\alias

where server   = the servers name (normally 0)
       alias   = the alias given to the applicant when it is created in NETGEN, this
                can be found by typing the "SHARE.DAT" located in the
                fileservers root directory.

Once this has been entered you will be able to continue and pledge the System disks.

2.6.7 SUPERWRITER - Common Questions

Question

How do I get a header on the first page ?

Answer

Specify the header in the usual way using the "\header" and "\he" then enter the following :-

   \print off,np,print on,pg 1

Question

I am doing a selective mailmerge and I keep getting a page for every record not selected ?

Answer

Enter the following in place of the original condition :-

   \print on
   \if condition ,print off
   \if condition ,endpass

where "condition" is the reverse of the normal statement i.e. to select only those people in Bristol the condition would be "town<>"Bristol"" as opposed to "town="Bristol"".

Question

The last record in my mailmerge is never printed ?

Answer

Make sure there is a carriage return after the last record in the datafile.

Question

How do I change the default line widths, page length, margins etc. ?

Answer

Add the relevant embedded commands to the end of the file "SW.DEF" without the usual preceding backslash "\" character.

Question

How do I send escape codes to my printer ?

Answer

Use the "\out" command i.e. "\out 27 64", this would send "ESC @" to the printer.

Question

How do I print the "£" sign ?

Answer

Set the print up so that the "£" sign is ASCII code 156 or use the "\out" command.

Question

How do I setup Superwriter for a cut sheet feeder ?

Answer

Superwriter does not support cut sheet feeders, depending on whether the sheet feeder is mechanical or electronic either set the page length longer (mechanical) or use the "\out" to sent the escape codes to load and eject the paper (electronic).

Question

I have put the line width "lw" command in to the "SW.DEF" file but it hasn't worked.

Answer

This command only works on documents created after the "lw" entry was added to the "SW.DEF" file.

Question

How do I install Superwriter for a printer ?

Answer

Run the program "INSW.COM" and select the required printer from the list. The printers displayed are the only ones available for Superwriter and cannot be changed.

Question

Does Superwriter support laser printers ?

Answer

Only if they emulate one of the printers listed when the "INSW.COM" program is run, i.e.

Epson FX80.

Question

How do I print via the serial port ?

Answer

From DOS use the "MODE" command to configure the port and re-direct out from LPT1: to COM1:.

2.6.8 WORD - Common Questions

Question

My mouse doesn't work with a VGA monitor when running Word 4 in graphics mode ?

Answer

Use "MOUSE.SYS" version VR 3.30.0.

2.6.9 WORDCRAFT - Common Questions.

Problem

Wordcraft 4 hanging on 80286 based computers

Symptoms

Certain combinations of keystrokes (Wordcraft have had over 200 variations reported to them) cause the computer to hang.

Reason

Wordcraft has its own keyboard buffer which stops slower computers from freezing when a fast typist is using the system. On previous versions of the software the buffer was turned off, Wordcraft 4 has the buffer turned on which causes the system to hang.

Solution

Edit the file "WORDMSGS.TXT", under the section "%GENERAL" there is a line which reads "94=64", change this to ";94=64" (in effect making that line a comment). This turns the keyboard buffer off and solves the problem.

2.6.10 WORDPERFECT - Common Questions

Question

I have installed Multi-user Wordperfect on a network and it won't print till I exit the program ?

Answer

This is caused by the Wordperfect not sending the interrupt to the servers spooler to release the print file. This can be rectified by installing the software as follows :-

1. If necessary remove the existing copy of Wordperfect from the Application area of the File server and re-copy the program from the original masters.

2. Run the program "WP.EXE", from the options provided select "IBM PC NET". This then goes on to the usual Wordperfect screen.

3. Exit the software and from DOS make the "WP.EXE" file read only i.e. attrib +r wp.exe.

The users can then run Wordperfect, when they come to install a printer they will be asked if it is a Network Printer, reply "Y" to this, the next question is whether the form feed after the document has been printed is suppressed, answer "N" to this.

This will clear the spooler without exiting the software or forcing the interrupt with the Alt/Cntrl/ Print Screen key combination.

Question

How do I print a "£" on a Postscript printer ?

Answer

Use the "PRINTER.EXE" program to change the Postscript prin'er drivers character translation table. Modify the ASCII code for the "£" sign (156) so that it sends ASCII 163.

Question

When I use some of the functions the screen goes into reverse video, the definition on this is not very good, I am using a paper-white display on a VGA board.

Answer

The way around this is to first set the machine to think it is a colour display ie. Xen-i - VGAPLUS COLOR, Xen-S and Qi - AMODE VGA=COLOUR. Then in Wordperfect under Setup, Display, set the Graphic screen type to IBM VGA 640x480 16 Colour and manually set the colours to your own preference.

Question

I have Wordperfect version 5, I have no printer driver for my Brother HL8 and I can not change foreground colour under Setup for my VGA screen.

Answer

Wordperfect will upgrade early versions of Wordperfect 5, you may contact Wordperfect directly on 0932-248488

2.6.11 WORDSTAR PROFESSIONAL - Common Questions

Question

Does Wordstar support Laser printers ?

Answer

Version 4.00 has printer drivers for the Canon LBP-8, HP Laserjet and Ricoh LP4080. There is no support for Laser printers in earlier versions unless the printer emulates one of the listed printers i.e. Epson FX80.

Question

How do I print the extended character set using a printer that emulates Epson ?

Answer

The Epson print drivers in WordStar 4 do not take advantage of the IBM extended character set that many of these printers now support. Earlier versions of these printers only supported 32 extended characters. Wordstar 4's drivers are written for these early Epson printers. The following WSCHANGE procedure will patch these drivers to use the extended character set.

1. From the WSCHANGE main menu select

> B printer,
> > C printer driver lib,
> > > D change printer driver data,
> > > > A select a driver,

and select the IBM graphics printer driver, option 32.

2. Then type F save driver patches; and a filename to hold the data, any unused name will do.

3. Enter only the COMPOS label, do not save any others; and type RETURN to finish.

> Now Re-select the driver you want to patch.

4. Strike any key to return to the Change Printer driver data menu, then type A select a driver, and select the Epson driver for your printer.

5. Type E Driver Auto Patcher, and enter the name of the file you created in step 2. When the autopatcher procedure is finished, type any key to return to the menu.

   You have just modified the composed character table for your printer driver.

6. Now type the equal sign (=) to allow patching directly to a label, and type DATA+28 in response to the Enter Driver address prompt.

7. The cursor will appear under the first pair of hexadecimal digits representing the data at that location. Type four zeros in a row, thereby zeroing out the first two values.

8. Then type X to exit back to the menu; Ctrl X to exit to the last prompt; and Y to finish the operation.

There may be some additional work necessary to select the extended character set depending upon your printer. Some printers allow switching between character sets using DIP switch setting, or front panel switch; others may require a special print control (patchable via. the initialization string, or a custom print control); others may require nothing at all. The printers manual will have to be consulted for this.

Question

I am using Wordstar Professional version 3.40 and the message "(pathname) INTERNAL .DCT not found -- Please try again." appears when loading dictionaries.

Answer

This occurs on computers running DOS 3.1 or greater when the dictionaries have been installed in a separate sub-directory. It can be fixed by the following patch to the CORRSTAR.OVR file using DEBUG :-

```
DEBUG CORRSTAR.OVR
-E3C0
1C17:03C0  CC.90
-E1342
1C17:1342  75.7C
-W
Writing E800 bytes
-Q
```

It is a good idea to make a copy of CORRSTAR.OVR before doing the patch.

Question

I am using a Wordstar 4.00 with a daisy wheel print and the printer stops printing after half a page.

Answer

This can be corrected by changing the busy time-out setting using the WSCHANGE program as below :-

1. From the WSCHANGE main menu select

    B Printer,
        F Printer interface,
            B Printer busy handshaking,
                F Long busy time-out,

2. Change the current setting from 20000 to 0, in effect disabling this feature.

3. Return to the main menu and exit WSCHANGE saving the new settings.

If this has no effect then check the cabling and/or handshaking especially if a serial port is being used for printing.

Question

I have installed Wordstar 4.00 on a network and it won't print till I exit the software ?

Answer

This is caused by Wordstar not sending the interrupt to clear the networks print spooler. I can be cured by entering the Alt/Cntrl/Print Screen (Microscreen style keyboards) or Alt/Cntrl/* (multiply sign on the numeric keypad) (ATE style keyboards) or making the following changes to the software using WSCHANGE.

1. From the WSCHANGE main menu select

    B Printer,
        F Printer interface,
            A Printer port selection,
                O Redirect device,

2. Change the device to "PRN".

3. Return to the main menu and exit WSCHANGE saving the new settings.

Question

When using Wordstar 4.00 and a VGA mono monitor I format text on screen so that it is bold or underlined and all that appears is the highlighted block where the text should be.

Answer

Modify the character attributes via WSCHANGE so that the character is bold and the background is normal, see below :-

1. From the WSCHANGE main menu select

   A Console,
      C Video attributes,

2. Select the enhancement and using the function keys change the character to bold and the background to normal.

3. Return to the main menu and exit WSCHANGE saving the new settings.

This only occurs on VGA monochrome monitors.

2.6.12 WORDSTAR 2000 - Common Questions

Question

When I print in landscape mode, using the Ctrl P X option, on a laser printer the top margin is in the wrong place and the first line is out of alignment.

Answer

This is caused by Wordstar 2000 sending to the printer the command to change orientation after setting the cursor position. The causes the printer to loose its initial settings. To correct this it is necessary to do the following :-

1. Load the program "WS2INS.EXE"

2. Select the "Install Printer" option and choose the printer type

3. Call the printer "LSCAPE" and save the selection

4. Select the "Modify printer settings" options choos :g the "LSCAPE" printer.

5. Select the "Change initilization and deinitialization string" option

6. For the initiliazation enter "^[&l1O" and for the deinitialization string enter "^[&l0O"

7. Choose the "Return to main menu" option then "Quit and save"

Now whenever a document needs to be printed, use the "LSCAPE" printer driver.

2.6.13   Multimate Advantage

Question

On my Xen-i 386 I find keystrokes are repeated.

Answer

This is caused by the keyboard accelerator and can be switched off in the Utilities menu of the package.

2.6.14   Foxbase plus(386) - Common Questions

Question

When I go into Foxbase, the signon screen appears if I then type SET PRINT ON [return] the message 'Printer not ready' appears.

Answer

Foxbase v2.10 is not recognising the parallel printer (this problem did not occur with earlier versions). Foxbase are currently working on a solution for this problem which occurs with Phoenix Bios.

2.7 Communications Software

2.7.1 ICL

2.7.1.1 TANGO from Network Designers Ltd. (Tel: 0865-821177)

Range of multi-tasking communications software for IBM PC, XT, AT and PS/2 compatibles. Available for stand-alone, clustered and networked systems (e.g. NetBIOS (Apricot VX-NET), NOVELL Advanced Netware, BICC ISOLAN etc.)

PC Cluster System

In an NDL PC cluster system all of the independent PC systems are connected to an NDL GAR-NET Multiple Access Controller (MAC) Unit. This intelligent unit forms the hub of a star based configuration of PC's. The PC's communicate with the MAC at up to 1Mbps through an adapter card installed in each PC. One of the PC's in the cluster is then used as the gateway to the mainframe computer.

TangoGate
ICL mainframe connection over leased, dial-up or direct synchronous connection. V24 operation using ICL Full XBM C03 protocol.

TangoLan
Connection over ICL's OSLAN (Open Systems Local Area Network) using ICL IPA3 protocol, providing Remote Session Access (RSA), Hard Copy and Direct Output Printing and File Transfer Facility (FTF).

TangoNet
Connection to ICL mainframe through public or private X.25 Packet Switch network, again using IPA3.

All three products provide:-

multi-tasking station software with multiple on-line sessions and 'Hot Key' to DOS.

Application Programming Interface (API), NDL provided facilities allowing co-residentPC applications to drive the Tango screen and keyboard interfaces.

Optional Application Data Interface (ADI). Allows co-resident PCprogram to exchange data with an application on another ICL ADI supporting system.

Optional File Transfer Facility (FTF). Conforms to the Network Independent File Transfer Protocol (NIFTP) as implemented by ICL on their computer systems.

Amethyst

Provides V24 connection to IBM mainframe using SNA/SDLC protocol and appearing as a 3270 cluster supporting LU1, LU2 and LU3 devices. Also available, X.25 Packet Switch connection supporting IBM's NPSI X.25 package.

Can co-reside in same PC or Gateway with Tango products.

AmberTerm

Dual concurrent asynchronous communications emulator providing emulation of DEC VT220, Tektronix graphics etc.

All designed to provide one stop shopping for corporate sites requiring access to IBM and ICL mainframes, DEC VAX and UNIX mini's and public data services.

2.7.1.2 CONNECT C03 and CONNECT OSI from Metascybe (Tel: 01-253-1001)

Connect C03 provides connection to ICL mainframe using C03 synchronous protocol (V24) via an intelligent controller. Stand-alone systems and NetBIOS networks (e.g. Apricot VX-NET) connect to the controller over asynchronous links.

Particularly suitable for connection of scattered remote PC's to a single mainframe port usir¯ low-cost asynchronous dial-up lines.

Connect OSI provides connection to ICL OSLAN and X25 services for NETBIOS compatible networks. Tried and tested on Apricot VX-NET.

Uses BICC ISOLAN card for Ethernet/Oslan connection.

2.7.1.3 PC29 from GB Computers (Tel: 0734-661149)

PC29 is available in single user or network versions to provide users of all Apricot systems (both Apricot generic and IBM compatible) with interactive and RJE access to ICL mainframe computers.

This is the only ICL emulator that supports the earlier Apricot generic products as well as the more recent IBM compatible systems.

Support is provided for Interactive Video Sessions, Hard Copy Printers, Line Printers, Card Readers and Operator Console concurrent with single DOS session.

Requires dedicated gateway with network version.

2.7.2 IBM

ACCENT COMPUTERS (Tel: 0444-870444)

Joint Marketing Agreement between Accent Computers and Apricot Computers for the marketing of IBM 3270 communications products for use on IBM compatible and Xenix systems.

PC to IBM Mini-computer

5250 protocol emulation providing local and remote access to IBM System 34/36/38 computers.

Local connection via twinax, supporting up to seven logical units.

Remote connection uses a SDLC communications adapter together with emulation of 5251 model 12 display station or 5294 Control Unit. Support for up to seven sessions.

Interface cards available for IBM PC or PS/2 compatible systems.

Also available, host resident file transfer software providing efficient data transfer between System/3x and micro computer.

PC to IBM Mainframe

Range of 3270 protocol emulations from Rabbit. Accent are UK importers.

Local co-ax connection to IBM 3174 or 3274 controller.

Remote connection via BSC or SNA communications emulating IBM 3274 Cluster Control Unit.

Support for 2, 4 or 8 concurrent interactive sessions.

Gateway interface for use on NetBIOS networks. Emulates IBM 3274 Cluster Control Unit, supporting up to 32 sessions of 3278/9 terminal emulation and 3287 printer emulation. Up to 8 sessions per workstation.

3270 Fast File Transfer Utility. Mainframe resident software running under TSO, VM/CMS or CICS. Provides high performance data transfer for co-ax connect, SNA or BSC remote and SNA/BSC LAN gateway.

Applications Program Interface compatible with IBM 3270PC HLLAPI (High Level API) version 1.0.

Script software to automate mainframe connection.

2.7.3 DEC

Asynchronous communications emulating DEC VT100/220/240 terminals.

Polystar VT100, VT220, VT240 emulation. DEC supported host file transfer software. Some copies still available in the warehouse. Contact Order Desk for up-to-date stock situation.

Kermit Public Domain Software - i.e. free of charge. Offers VT100 emulation plus file transfer between any two machines running Kermit. Lancaster University (Tel: 0524-65201)

Reflection VT100 emulator including host resident file transfer software. Wick Hill Associates (Tel: 0784-38441)

2.7.4 Honeywell/Sperry/Burroughs

Emulations available from MILLHOUSE DESIGN (Tel: 042-058-651)

Full range of emulations available:

    Burroughs TD830/TC500
    ICL C03
    IBM 2780, 3270, 3780 and 5250
    Honeywell VIP 7700 and 7800
    Sperry Univac UTS20

2.7.5 Honeywell

Asynchronous (VIP7300/7800) and Synchronous (VIP7800) emulation. Includes Honeywell KERMIT file transfer. Honeywell Express (Tel: 0442-212781)

2.7.6 BACS (Banks Automated Clearing Service)

Available from Millhouse Designs (Tel: 042-058-651)

2.7.7 Viewdata

COMMUNIQUE from Apricot for Apricot Generic systems only. Viewdata is NOT supported in the IBM version.

MULTICOM from Richard Cumming Associates (Tel: 037284-2345) Teletype (for BT-GOLD) and Viewdata (for PRESTEL) access

MULTICOM NET
Multi-user network version. Enables modem(s) installed in PC's to be accessable to all workstations on NetBIOS supported networks.

2.7.8 Remote access to networks.

a) Dedicated workstation on network with Carbon-Copy or PC-Anywhere loaded with asynchronous link to remote PC running similar program. PC-Anywhere   - Telesystems Ltd. (Tel: 02406-6365) Carbon Copy   - Softsel Ltd. (Tel: 01-568-8866)

b) Asynchronous Gateway from GB Computers (Tel: 0734-661149) Support for incoming and outgoing connections, auto dial/answer on NetBIOS networks. Single dedicated gateway on network can provide upto 8 concurrent links.

2.7.9 Mail

NETWORK COURIER for VX-NET.

Windows front end provided in Environment Pack with current Apricot systems. Network Post Office bundled with VX-NET 3.1. This will provide a full network mail system for a single network system.

Inter network version available as an upgrade option. Will communicate with similar software on a remote network providing regular transmission of mail between the relevant post offices without user intervention.

Remote User upgrade also available. This module allows the user of a remote stand-alone system to call up a host network and send/receive mail.

2.7.10 X400

International standard for messaging between different computers.

New version of Network Courier under development to support X400 Message Transfer Agent.

2.7.11 Asynchronous Communications Software

General Features

	Auto dial	Auto- answer	Auto log on	Command language	Timed calls	Help screens	Hayes com.	Other modems	Windows
DTC	Y	Y	Y	Y	Y	N	Y	Y	Y
Anywhere	Y	Y	Y	N	N	N	Y	Y	N
Ascom IV	Y	Y	Y	Y	Y	Y	Y	Y	N
ChitChat	Y	Y	Y	Y	N	Y	Y	Y	N
Breakout	Y	Y	Y	N	N	Y	Y	Y	N
Vicom	Y	Y	Y	N	N	Y	Y	Y	N
Multicom Plus	Y	Y	Y	Y	N	Y	Y	Y	N
Datatalk	Y	Y	Y	Y	Y	Y	Y	Y	N
Crosstalk XVI	Y	Y	Y	Y	N	Y	Y	Y	N
Mirror	Y	Y	Y	Y	Y	Y	Y	Y	N
Crosstalk	Y	Y	Y	Y	N	Y	Y	Y	N
Sidetalk	Y	Y	Y	Y	N	Y	Y	Y	N
Smartcom II	Y	Y	Y	Y	Y	Y	Y	Y	N
Data-Link	Y	Y	Y	Y	N	Y	Y	Y	N
Dialup	Y	Y	Y	N	N	Y	Y	Y	N

On-line features

	Text editor	Data capture to disk	Connect time	Call logging	Terminal emulation	Full Prestel graphics display
DTC	Y	Y	Y	Y	Y	Y
Anywhere	N	Y	N	N	Y	N
Ascom IV	Y	Y	N	Y	Y	N
ChitChat	Y	Y	Y	Y	Y	Y
Breakout	N	Y	Y	Y	Y	Y
Vicom	Y	Y	Y	Y	Y	Y
Multicom Plus	Y	Y	Y	N	Y	Y
Datatalk	Y	Y	Y	N	Y	Y
Crosstalk	N	Y	Y	N	Y	N
Mirror	Y	Y	Y	N	Y	N
Crosstalk	Y	Y	Y	Y	Y	N
Sidetalk	N	Y	N	N	Y	N
Smartcom II	Y	Y	Y	N	Y	N
Data-Link	N	Y	Y	N	Y	Y
Dialup	N	Y	N	N	Y	Y

Micro to micro links

	Local	Password	Single	Error	Multiple	Remote	Minimum	Supplier
DTC	Y	Y	Y	Y	Y	N	640K	APRICOT
Anywhere	Y	Y	Y	Y	Y	Y	128K	Telesystems
Ascom IV	Y	Y	Y	Y	Y	Y	256K	Telesystems
ChitChat inc. modem	Y	Y	Y	Y	Y	Y	128K	Sagesoft
Breakout inc. modem	N	N	Y	Y	N	N	128K	PCC
Vicom	Y	Y	Y	Y	N	N	640K	AMT
Multicom Plus	Y	Y	Y	Y	Y	Y	64K	Cumming
Datatalk	Y	N	Y	Y	Y	Y	128K	
Crosstalk	N	Y	Y	Y	Y	Y	96K	Softsel
Mirror	Y	Y	Y	Y	Y	Y	192K	MDP
Crosstalk	Y	Y	Y	Y	Y	Y	256K	Softsel
Sidetalk	Y	N	Y	Y	Y	N	128K	Roundhill
Smartcom	Y	Y	Y	Y	N	Y	192K	Hayes
Data-Link	N	N	Y	Y	Y	Y	256K	Dataflex
Dialup	N	N	Y	Y	N	N	256K	Dialup

Telesystems (Tel: 02406-6365)

Sagesoft (Tel: 091-284-7077)

PCC - PC Communications - (Tel: 0895-444455)

AMT - AM Technology - (Tel: 01-937-0002)

Roundhill Computers (Tel: 0672-54675)

Cumming - Richard Cumming Associates - (Tel: 037284-2345)

Hayes (Tel: 01-848-1858)

Dataflex (Tel: 01-543-6417)

Dialup (Tel: 021-643-7688)

MDP (Tel: 0225-60491)

Softsel (Tel: 01-568-8866)

2.7.12 Desktop Communications (DTC)

Desk top communications (DTC) is the name Apricot uses to describe its windows PM based communications software which consists of integrated terminal emulators, file transfer and telephone management. These DTC applications are targeted both at the single user PC environment (using the serial port or modem) and the network user, where a shared modem or serial port is used on the server.

A server communications management program is provided as standard with VX NET 3.1 which co-ordinates the network communication resources and user access. As with the Electronic Mail server, this product will run on top of any NETBIOS network but in the case of non VX Net Networks will require a dedicated workstation to act as the communications server. The server element of Qi environment DTC will be made available separately for use with non VX Net networks.

Qi Environment DTC allows the user to build a database of information for all aspects of his data and voice communication needs. Information is displayed as stacked cards and simply clicking the mouse on the appropriate card selects the required information and allows autodialling and terminal setup where appropriate. Service control elements are also provided enabling a series of activities (eg dial, logon, page select, data capture and logoff) to be performed on selection and the ability for these tasks to be automated with attended or unattended operation are further unique features.

The database is multi-user with the ability for each user to have his own view of appropriate data allowing a common database of telephone numbers etc to be established but maintaining the ability to preserve certain facilities for legitimate users.

DTC also allows multiple concurrent calls, thus if more than one modem is available it is possible to have connection to more than one remote host with each dialog displayed in a window on screen. DDE facilities allow this information to be accessed by other applications such as Excel so that information from multiple sources can be analysed and co-ordinated into a single display in real time (eg information from Prestel on exchange rates and information from the company accounting system could be fed into a financial planning model).

Once installed DTC allows users with no knowledge of modems or serial data communications to perform sophisticated data communications tasks easily and efficiently.

Terminal Emulation (or Remote Session Access)

Apricot provides a range of terminal emulation programs which run under the Windows PM environment and provide multiple session access to remote hosts either over a network (any NETBIOS network) or via a local serial port.

The terminal emulations provided as standard are:-

-       TTY, VT 52, 100,220; these emulators operate either via the local serial port/modem or over the network via a remote serial port/modem on a server.

-       Viewdata; full viewdata/Prestel standards including choice of character sizes; again the user can use a local or remote serial port/modem.

All terminal emulators contain the following features:-

-       Choice of 4 fonts for each of the VT terminal emulators and 2 fonts for Viewdata.

-       Redirection of information to other applications via Windows DDE for interaction with other applications.

- Data capture to file with time and date stamp plus off line viewing.

- Viewdata page manager with page index.

- A sophisticated and extensive Control file language for automatic connection to any service from a "script file".

- Cut and Paste from any terminal window to any Windows application.

Remote Workstation Access

A remote PC can access a host computer via a workstation running DTC (non-dedicated) on the network using the DTC terminal emulators.

File Transfer

The *Qi Environment* pack provides facilities for the transfer of files between computers with encryption and error checking. Error checking is provided with standard facilities such as the X.Modem protocols. File encryption is provided via user defined mapping tables which are used to translate the data to a different format suitable for transmission to a particular service or user. The general features of the file transfer section are:

Standard:

Multiple file transfer

Multiple destinations

Xmodem protocol

Data encryption

Unattended operation

7 day timer

Multiple week repeat

Full logging with time/date stamping

Log file with view and edit facilities

Telephone Management

The telephone manager allows users to set up a database of cards which contain such information as name, address, telephone number etc. This information can then be used to automate many functions such as dialling for voice and data calls (e.g. for use with file transfer and remote host connections). The user can in addition set up groups of people he may wish to contact and automate the telephone contact via a list.

The features are:

Graphical display of telephone directory.

Search facility.

User configurable search key point

Group dialling

Dialling code book

Automatic call logging

Log file view/edit

Call progress monitoring

Real time monitor for duration and cost

User definable telephone directory print format

User configurable time and charge bands

Multiuser access to telephone directory.

Dual Communication Channel port support

A set of device drivers for the additional serial ports on the *Qi* range are provided with the *Qi Environment* pack. These drivers cover MS-DOS, OS/2 and XENIX requirements. (using the XENIX device driver a 1 to 4 user system can be configured with *Qi* without the need for any add-in serial boards.)

2.8 Systems Software - Micro Channel Architecture

2.8.1 Qi Backup and Restore

There are two versions of backup and restore on the Qi, these are:

BACKUP.EXE
RESTORE.EXE

ABACKUP.EXE
ARESTORE.EXE

The ABACKUP and ARESTORE routines are Apricot utilities as on our 80386 based range and should be used to restore files from PCS 386 machines in packed format.

BACKUP and RESTORE are Microsoft utilities and do not work on packed format files.

3.1 Hardware (Cabling etc)

3.1.1 Point 32 to VX upgrade

This upgrade does not include a screen and keyboard for the existing server. The server to be upgraded must be returned.

Note:

Point 32 will never support VX workstations, so it is now even more important to upgrade Point 32 users to VX systems.

3.1.2 Ethernet Card

(Quick Reference Guide No. 1)

This card is used on Xen-i 286 and 386 Workstations on Ethernet networks.
This is a Quick-reference guide for the Apricot Ethernet card which is Western Digital type WD 8003E. More complete information is included in the box with the card.
This is intended to be the first of a series of Quick-Reference Guides for products, which may be copied and stored together in a separate binder if required.

D-Type connector

Pin	Name	Description
1	Cl-S	Collision Detect Shield
2	Cl-A	Collision detect circuit (+)
3	DO-A	Data Out circuit (+)
4	DI-S	Data In circuit shield
5	DI-A	Data In circuit (+)
6	VC	Voltage Common
7	CO-A	Control Out circuit (+)
8	CO-S	Control Out circuit shield
9	Cl-B	Collision detect circuit (-)
10	DO-B	Data Out circuit (-)
11	DO-S	Data Out circuit shield
12	DI-B	Data In circuit (-)
13	VP	Voltage Plus
14	VS	Voltage Shield
15	CO-B	Control Out circuit (-)
Shell	PG	Protective Ground (conductive shield)

BNC Connector

Pin	Name
Signal	Data (+)
Shield	Data (-)

Jumper block W1

This sets the I/O base address for the Ethernet card. Not to be confused with the LAN address which has to be set on Omninet cards. The LAN address on Ethernet cards is hard-wired. Jumpers 3-4, 5-6 and 9-10 should normally be linked. This gives an I/O base address of 280h. These should normally only need to be changed if more than one Ethernet card is used in a single machine. For a list of I/O addresses used by the system see the Xen-i technical Reference Manual, or the Xen-i 386 Technical Reference Manual.

Jumper block W2

Only one pair of pins should be connected. This will normally be pins 9-10.

Jumper block W3

All jumpers should be fitted if Thinwire Ethernet is used. Otherwise none should be fitted.

Jumper block W4

This should only be fitted if Ethernet version 1 is being used.

Jumper block W5

For Thinwire Ethernet

> Fitted - 200 metre cable segment length or repeaters being used.
> Not fitted - 300 metre segment lengths.

It should be noted that the default configuration for the Apricot Ethernet card is IRQ3. This is the same interrupt request level as used by devices operating on COM2:, for example the Triplex modem in its usual configuration.

Where this clash occurs you should select an unused IRQ on the Ethernet adaptor and change the Device=Ethernet.sys line in Config.Sys to

DEVICE=ETHERNET.SYS /IRQ:n   where n is the IRQ number required

3.1.3 New Tap Box Approval number

The new tap box can be identified by an Apricot logo on the front, and allows the GPO socket to be used as a primary circuit.
The BT Approval number for the new network Tap Box is :-

NS/2925/3/H/452646

3.1.4   Omninet 2 cards in 386 machines

Omninet2 cards should be run with the LAN controller inserting 2 wait states when acting as bus master in 386 machines. The number of wait states is a command line option on the OMNINET2.SYS driver, but the default in version 1.5.5 and earlier is 1.

Running with one wait state causes no problems on 286-based machines. On a 386-based machine it causes the DRAMS to run out of spec. This can lead to DMA transfers between the card and system memory being corrupted.

To use two wait states, make the following entry in CONFIG.SYS :-

DEVICE=OMNINET2.SYS /x 2

The default setting in OMNINET2.SYS version 1.5.6 and later will be 2 wait states.

3.1.5   VX Systems and Omninet 2

Performance on a VX network can be improved by installing an Omninett2 card in the server, particularly if there is a number of Omninet2 based stations on the network.

3.1.6   Approved Tape Media for VX servers

DEI Series II Gold	600 feet	12,500 ftpi/550 oersted tape
3M DC600XTD	600 feet	12,500 ftpi/550 oersted tape

3.1.7 VXNET3 Authorisation keys

Do not connect or disconnect the Apricot Authorisation key required for VXNET 3 while either the server or printer is powered on. This can result in corruption of the key, making it impossible to use the system, and requiring a replacement key.

3.1.8 Quad card in VX Server

(Quad card over the network).

The following notes are provided as a guide to enable ease of setting up:

Check software versions:
QUAD.SYS must be first line in CONFIG.SYS.
QUAD.SYS must be VR 3.20.0 14th Apr 1988. (If earlier version number present,
.   system will stop after   printing 512bytes).

Check hardware:

Check IC75 on motherboard is 82C206 and has the legend F-1 on it.

PAL on PX adaptor should be PXQA009VA if running XENIX, PXAC09 if only printing.

PX adaptor should be set to 'board two' ie link bottom two pins.

Quad card should be set to 'board two' ie both dil switches off.

Check spider serial lead. Verify if this is 'straight through' or 'crossed' connection. See diagram below.

Check printer is correctly setup for 'XON/XOFF', and is correctly setup for baud rate, no. of bits, parity, stop bits (This is a proven combination: 9600, 8, even, 1).

Check printer will operate in XON/XOFF mode without requiring additional 'hard-wire' connections in plug at printer end. (Refer to printer manual).

It may also be sensible to check this by connecting to a 'stand-alone' micro.

Check 'NETGEN':

First, select 'server definition' in 'netgen'. Move cursor down to 'quad card'. This option should be found to be default at 'no'. Place the cursor on 'no', then move it to 'yes'.

Upon doing this the 'QUAD CARD DEFINITION' screen should appear. Type in an alias for each channel, such as 'PRNTR2', 'PRNTR3', 'PRNTR4', 'PRNTR5'.

It is not possible to use COM1, COM2, etc, over the network, since these are references to comms ports on a non-networking(stand-alone) system. This is due to the 'redirector' only being able to refer to the usual printer alias such as 'LPT1'. It is, therefore, only possible to assign printer alias LPT1, LPT2, LPT3 over the network. If more than three printers are required, the additional ones must also be assigned LPT1, LPT2, LPT3, LPT1, etc..but only three at a time should be labelled 'yes' as being connected. The table below shows a typical NETGEN entry as an example.

ASSIGN RESOURCES : manager

Server	Printer	Device	Connect
0	PRNTR1	LPT1	YES no
0	PRNTR2	LPT2	YES no
0	PRNTR3	LPT3	YES no
0	PRNTR4	LPT1	yes NO
0	PRNTR5	LPT2	yes NO

Please note:

To move between printers the 'USE' command should be used from the command line. First remove a connection with 'USE LPT1: /D', then reconnect 'alternative' with 'USE LPT1: PRNTR5'.

'Spider' link cable.

```
            2 ---------------------- 2
            3 ---------------------- 3
            7 ---------------------- 7

            8 ---------------------- 2
            9 ---------------------- 3
           21 ---------------------- 7

           10 ---------------------- 2
           11 ---------------------- 3
           23 ---------------------- 7

           12 ---------------------- 2
           13 ---------------------- 3
           25 ---------------------- 7
```

25-way 'D'-type on   four 25-way
quad card   'D'-type leads
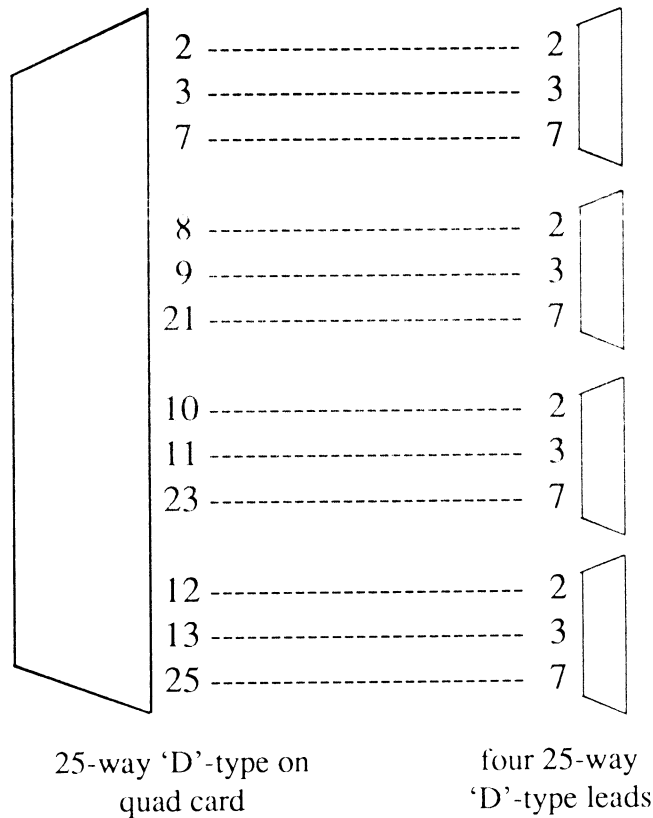
We apologise for the previous publication which showed an incorrect cable configuration.

Other relevant information may be found in:

(1)   Technical Bulletin (19) section 1.8.1.1
(2)   Technical Bulletin (19) section 1.8.3
(3)   PX Adapter Installation Guide(6 pin model)
(4)   PX Adapter Installation Guide(9 pin model) -Apricot part no.11741671
(5)   PX Adapter Installation Guide(Amendment No.1) -   part no.11992071
(6)   VX Systems Maintenance Course Notes (16/2/88) -last five pages
(7)   RS232 Card Installation/User Guide - Apricot part no. 11643171
(8)   Technical Bulletin (22) section 3.2.3.19
(9)   Network Managers Guide, Part2 pages 6/4 to 6/14 and pages 10/12 to 10/20.

3.1.9 Configuring VX servers with no MDA card, for VX-Net ID, IC(2), Not Applicable to VX-Net 3

Correct installation of CONFIG.SYS device drivers

There are two possible configurations of video display on a VX network server, either with an MDA card fitted, or without. There is also a corresponding configuration switch setting for the CONSOLE.SYS device driver called by CONFIG.SYS in the root of the server. If this device driver is not called correctly for the configuration in use, TBACKUP and TRESTORE will not function correctly.

Configuration 1. An MDA video card is installed in the VX server

In this configuration, you can either have a keyboard and a screen attached to the server and run 'stand-alone' operations like TBACKUP and TRESTORE directly on the VX server, or you can run them remotely via the CONMGR program on a workstation.

The entry in CONFIG.SYS that calls CONSOLE.SYS (DEVICE=CONSOLE.SYS /E) **must** contain the /E switch on the command line, so that messages are echoed to the video card in the VX server.

This is the default configuration as setup by NETGEN when you run a SERVER DISK-PRODUCTION, and will not need to be modified.

Configuration 2. There is NO MDA card in the VX server

In this configuration, all 'stand-alone' operations, including TBACKUP and TRESTORE, **must** be run remotely via the CONMGR program on a workstation.

The entry in CONFIG.SYS that calls CONSOLE.SYS (DEVICE=CONSOLE.SYS /E) **must** have the /E switch removed, so that the line reads

    DEVICE=CONSOLE.SYS

so that messages are not echoed to the video card in the VX server.

As this is **not** the default configuration setup by NETGEN, you will have to edit (e.g. with EDLIN) CONFIG.SYS in the server's root every time you do a SERVER DISK-PRODUCTION from within NETGEN.

Effects

If the /E switch is used with configuration 2, messages that would be echoed to the video card are written to system memory at B000h, thus overwriting any application that is using that area of system memory.

As TBACKUP uses this memory for part of its internal buffering of data, the data that is in that area of memory when it is written to by CONSOLE.SYS is lost, and corrupt data is

written to the tape.
This in turn will cause TRESTORE to crash when reading the tape, as file headers will be corrupt. This failure within TRESTORE to read the file header may cause TBACKUP to hang, or it may exit with the TRESTORE help screen and a 'Null pointer assignment error' message. You may also see a 'Memory allocation error. Cannot load COMMAND.COM' message at the end of a TBACKUP run.

3.1.10 PS8 Printers Attached to Network Servers

Problem

PS8 (all variants) not printing when attached to a Network Server's serial port.

Symptoms

Data is sent to the printer, the BUSY lamp flashes but no output is produced.

If the printer is attached to a workstation or stand-alone machine, with the same cable and MODE settings it prints correctly.

Or, if the printer is set to Diablo mode (or HP mode if the printer is a PS8/2 Plus) when connected to the Server it prints correctly.

Cause

The main reason for this is having the Separator Page option set to YES within NETGEN or enabled by CONMGR.

The Separator Page is not in Postscript format and as such will not be interpreted correctly by the printer, this locks the printer and the subsequent print job will not be printed.

If problems are encountered make sure the Separator Page option within the networking software is disabled. This is done either through Netgen with VX-Net or by editing the SHARE.DAT file with SEP OFF AUX: when using PC Share.

3.1.11 Mains Requirement for Network Installations

Where possible connect all parts of the network system, ie stations, servers, monitors etc. to the same phase of the buildings supply. This is not always possible to do whilst still conforming to I.E.E. regulations if using already installed sockets. In the worst case a dedicated line could be installed with keyed sockets purely for the network to use.

Check that there is no reversal of any of the supply cables, ie live and neutral reversed, neutral and earth reversed. The most common place for this is in extension leads. (This is the most common cause of blown LAN cards).

Ensure that all the socket outlets in use by network equipment conform to the current issue of the regulations with regard to Earth loop impedance specifications. Where possible try to use sockets that have a similar earth loop impedance so as to minimise earth loop effects.

If you are unsure of any of the above requirements for mains supply get an electrician or Apricot Computer Services to check the site prior to installation.

3.2 Network Software

Below is a list of Network software with the relevant releases on each of the supported network software, ie. VX-Net 3.11, 3.1, 3.03, VX-Net 2.1, VX-Net 2 (ie. ID and IC), PCSHARE 1.0, MF-Net 1.0 and MF-Net 7 (ie. 6 and MFURIA).

Software	VX-Net 3.11	VX-Net 3.1	VX-Net 3.0	PCSHARE	VX-Net 2.1	MF-Net 7.1	VX-Net 2.0	MF-Net 7
ATMODEM. SYS	1.0.2	----- > -----	--- > ----	---- > ----	---- > ----	---- > ----	---- > ----	---- >
BOOTSRV.EXE	3.1.1	----- > -----	1.5.6	---- > ----	---- > ----	---- > ----	1.5.5	---- >
CONMGR.EXE	3.1.0	----- > -----	3.0.0	---- > ----	---- > ----	---- > ----	1.5.4	---- >
CONSOLE.SYS	3.1.1	--- 3.1.0 ---	3.0.2	---- NA ----	1.5.5	---- > ----	---- > ----	---- >
ENETBIOS.EXE	3.1.3	--- 3.1.1 ---	3.0.0	---- NA ----	---- > ----	---- > ----	---- > ----	---- >
ETEST.EXE	3.0.0	----- > ----	--- > ----	---- NA ----	---- > ----	---- > ----	---- > ----	---- >
ETHER592.SYS	3.1.2	--- 3.1.1 ---	--- NA ---	---- > ----	---- > ----	---- > ----	---- > ----	---- >
ETHERCOM.SYS	3.1.1	-- 3.0.2 ---	3.0.0	---- NA ----	---- > ----	---- > ----	---- > ----	---- >
ETHERCOM.EXE	3.1.1	-- 3.0.2 ---	3.0.0	---- NA ----	---- > ----	---- > ----	---- > ----	---- >
ETHERNET.EXE	3.1.1	----- > -----	3.0.0	---- > ----	--- > ----	---- > ----	---- > ----	---- >
ETHERNET.SYS	3.1.3	--- 3.1.1 ---	3.0.0	---- > ----	--- > ----	---- > ----	---- > ----	---- >
EXPORT.EXE	3.1.3	--- 3.1.1 ---	3.0.0	---- > ----	--- > ----	---- > ----	---- > ----	---- >
GETTIME.EXE	1.5.0	----- > ----	--- > ----	---- > ----	--- > ----	---- > ----	---- > ----	---- >
KEYINSTL.EXE	3.1.0	----- > ----	--- NA ---	--- 3.0.3 ---	--- NA ----	---- > ----	---- > ----	---- >
LOGOFF.EXE	3.1.2	-- 3.1.0 ---	3.0.2	--- 3.0.3 ---	-- 1.5.6 --	---- > ----	---- > ----	---- >
LOGON. EXE	3.1.2	-- 3.1.0 ---	3.0.2	--- 3.0.3 ---	-- 1.5.6 --	---- > ----	---- > ----	---- >
MINSES.EXE	3.0.1	----- > -----	3.0.0	--- 3.0.1 ---	---- > ----	---- > -----	1.5.5	---- >
MODEMAPR .SYS	3.1.2	----- > ----	--- > ----	---- > ----	---- > ----	---- > ----	---- > ----	---- >
MODEMPX. SYS	3.1.2	----- > ----	--- > ----	---- > ----	---- > ----	---- > ----	---- > ----	---- >
MODEMRDR.SYS	3.0.0	----- > -----	--- > ----	---- > ----	---- > ----	---- > -----	1.5.4	---- >
MODEMSRV.EXE	3.0.0	----- > -----	--- > ----	---- > ----	---- > ----	---- > -----	1.5.4	---- >
MODEMUSE. EXE	3.0.0	----- > ----	--- > ----	---- > ----	---- > ----	---- > -----	1.5.4	---- >
MODEMXXX. SYS	3.1.5	----- > ----	--- > ----	---- > ----	---- > ----	---- > ----	---- > ----	---- >
MT.EXE	3.1.3	--- 3.1.1 ---	3.0.0	---- NA ----	---- > ----	---- > ----	---- > ----	---- >
NBSTAT .EXE	3.0.0	----- > ----	--- > ----	---- NA ----	---- > ----	---- > ----	---- > ----	---- >
NET. EXE	1.0.1	----- > ----	--- > ----	---- NA ----	---- > ----	---- > ----	---- > ----	---- >
NETBIOS.EXE	3.1.0	----- > ----	3.0.0	---- > ----	---- > ----	---- > -----	1.5.4	---- >
NETCONV.EXE	3.0.0	----- > ----	--- > ----	---- NA ----	---- > ----	---- > ----	---- > ----	---- >
NETDISK.SYS	3.1.1	-- 1.5.7 ---	1.5.6	---- > ----	-- 1.5.5 --	---- > ----	---- > ----	---- >
NETGEN.EXE	3.1.7	-- 3.1.5 ---	3.0.0	---- NA ----	-- 1.5.7 --	---- > ----	---- > ----	---- >
NETSTAT.EXE	1.5.4	----- > ----	--- > ----	---- > ----	--- > ----	---- > ----	---- > ----	---- >
OMNINET.IBM	3.1.0	----- > ----	--- NA ---	---- > ----	--- > ----	---- > ----	---- > ----	---- >
OMNINET.SYS	1.5.5	----- > ----	--- > ----	---- NA ----	-- 1.5.4 --	---- > ----	---- > ----	---- >
OMNINET.PX2	1.5.5	----- > -----	--- > ----	---- NA ----	-- 1.5.4 --	---- > -----	---- > ----	---- >
OMNINET. PX	1.5.5	----- > -----	--- > ----	---- NA ----	-- 1.5.4 --	---- > ----	---- > ----	---- >
OMNINET 2. SYS	3.1.1	----- > -----	3.0.0	---- > ----	--- > ----	---- > -----	1.5.5	---- >
PASSWORD.EXE	3.1.0	----- > -----	3.1.5.3	---- > ----	--- > ----	---- > ----	---- > ----	---- >
PCSHARE.EXE PRINT. EXE	NA	----- > -----	--- > -----	1.0.0	--- NA----	---- > ----	---- > ----	---- >
PRINTQ. EXE	1.01	----- > -----	--- > ----	---- > ----	---- > ----	---- > ----	---- > ----	---- >
REDIR.EXE	1.5.4	----- > -----	--- > ----	---- > ----	--- > ----	---- > ----	---- > ----	---- >
SERVER.EXE	3.1.1	-- 3.0.1 ---	3.0.0	---- > ----	--- > ----	---- > -----	1.5.6	---- >
SETNAME.EXE	1.01	----- > -----	--- > ----	---- > ----	--- > ----	---- > ----	---- > ----	---- >
.SOFTCOPY.EXE	1.5.5	----- > -----	--- > ----	---- > ----	--- > ----	---- > ----	---- > ----	---- >
SOFTCRE.EXE	1.5.5	----- > ----	--- > ----	---- > ----	--- > ----	---- > -----	---- > ----	---- >
SOFTDEL.EXE	1.5.5	----- > ----	--- > ----	---- > ----	--- > ----	---- > ----	---- > ----	---- >
SOFTDIR.EXE	1.5.5	----- > -----	--- > ----	---- > ----	--- > ----	---- > ----	---- > ----	---- >
SOFTTYPE.EXE	1.5.5	----- > -----	--- > ----	---- > ----	--- > ----	---- > ----	---- > ----	---- >
TALK.EXE	3.0.0	----- > ----	--- > ----	---- > ----	-- 1.5.3 --	---- > ----	---- > ----	---- >
TIMESRV.EXE	3.1.0	----- > ----	3.0.0	---- > ----	-- 1.5.6 --	---- > ----	---- > ----	---- >
USE.EXE	3.1.2	-- 3.1.0 ---	3.0.2	--- 3.0.3 ---	-- 1.5.6 --	----- > ----	---- > ----	---- >

Software	VX-Net 3.11	VX-Net 3.1	VX-Net 3.0	PCSHARE	VX-Net 2.1	MF-Net 7.1	VX-Net 2.0	MF-Net 7
WHO.EXE	3.0.0	>	>	>	1.5.3	>	>	>
XPORT.EXE	3.1.0	>	3.0.0	>	>	>	1.5.4	>
Network specific DOS software								
AMLOAD.EXE	1.5.9	1.5.8	1.5.7	>	>	>	1.5.5	>
CACHE.EXE	3.30.3	>	>	NA	3.20.0	NA	3.20.0	NA
QUAD.SYS	3.20.0	>	>	>	3.20.1	>	3.20.0	>
SERVER.SYS	3.30.3	3.30.2	3.30.1	NA	>	>	>	>
Apricot Architecture Software								
GWBASIC.EXE	3.11.1	>	>	>	>	>	>	>
HOST.EXE	1.5.4	>	>	>	>	>	>	>
REDIR.EXE	1.5.4	>	>	>	>	>	>	>
REMOTE.EXE	1.5.4	>	>	>	>	>	>	>
IBM Architecture Software								
HOST.EXE	1.5.4	>	>	>	>	>	>	>
REMOTE.EXE	1.5.4	>	>	>	>	>	>	>
Apricot MS-DOS Software								
640200EG.EXE	3.2.1	>	>	>	>	>	>	>
640350EG.EXE	3.2.1	>	>	>	>	>	>	>
720348EG.EXE	3.2.1	>	>	>	>	>	>	>
AEMM.SYS	4.0.0	>	>	>	>	>	NA	>
AEMM386.SYS	4.00.0	>	3.2.0	NA	>	>	>	>
AVERIFY.EXE	1.5.4	>	>	>	>	>	>	>
BACKUP.EXE **	1.5.4	>	>	>	>	>	>	>
DCOPY.EXE	1.5	>	>	>	>	>	>	>
GWBASIC.EXE	3.20.2	>	>	>	>	>	>	>
INTECTXT.SYS	3.20.3	>	>	>	>	>	>	>
MOUSE.SYS	3.30.0	>	>	>	>	>	>	>
MS.EXE	1.1.0	>	>	>	>	>	>	>
MSCALC.SYS	3.30.1	>	>	>	>	>	3.20.6	>
RESTORE.EXE **	1.5.4	>	>	>	>	>	>	>
SETUP.EXE	1.2.3	>	1.2.2	>	>	>	1.2.1	>
TAPE.SYS	3.20.2	>	>	>	>	>	>	>
TAPES.SYS	1.0.2	>	>	NA	1.0	NA	1.0	NA
TBACKUP.EXE	3.20.5	>	>	NA	3.20.5	NA	3.20.5	NA
TIMEBOMB.EXE	1.0.0	>	>	>	>	NA	>	>
TRESTORE.EXE	3.20.6	>	3.20.5	NA	3.20.6	NA	>	>

** On Qi and Xen-S these utilities are now called ABACKUP and ARESTORE.

VXNET 3 FEATURES

VXNET3 & VXSCSI

Before upgrading the VX from a previous release of VX-Net make sure Boot Roms are version 1.1.8 or later. Also the hard disk needs to be updated with FDISK & FORMAT as the operating system MS-DOS 3.3 requires it.

FILE SERVERS (80386) WITHOUT MONITORS

All Apricot 80386 machines are tested at Glenrothes with VGA monitors . As you know we ship all 386 machines with the exception of the VX1000 with VGA cards . Boot Roms v1.1.5 or later support the 386 machines without a monitor for use as a file server . However this assumes the missing card would be a MDA card & SETUP.EXE has monitor type as MDA .Therefore if you remove that card or use a VX without a card the SETUP.EXE program is incorrect & the dip switches on the motherboard could also be incorrect .
Problem - To start fileserver you need to hit F1 on the keyboard .
Solution - Insert monitor card & enable MDA in SETUP . Check motherboard is set to monochrome Then restart file server .

AUTHORISATION KEYS

The VX-Net software now requires an Authorisation key & holder which is fitted to the parallel port of the file server . (Since the PC286 , the upgraded PC/XI has a different parallel port it cannot be used as a primary server with VX-Net3 . Also note the XEN MF cannot be used as a primary file server .) The Backup disks are not copy protected & are the same for 1 to 5 user as for unlimited users . However there is an install disk which ties in with the licensed authorisation key and enables the software.
We have changed our Quality Assurance on checking authorisation keys since we shipped the first batch of eighty . Up till now we have had a near 100% success rate since the change !!!!

INSTALLING AUTHORISATION KEYS

If you experience problems installing the key, disconnect the printer and try again.

LOGON.EXE

The Authorisation Key checking added for LOGON v3.0.2 can give rise to four new error messages:-

"CANNOT CONNECT TO MAIN0 .
PLEASE CHECK THE CONFIGURATION OF MAIN0 "
This could be because Main0 is not ready , or due to a shortage of virtual circuits at Main0 or the workstation (ie /nvc) . Check Netstart.Bat on file server and /or Autoexec.bat on workstation .

"AUTHORISATION KEY NOT INSTALLED"
Logon has connected to Main0 but cannot find the Authorisation Key. Check key is properly installed & repeat logon .

"UNAUTHORISED MACHINE FOR THIS NETWORK"
Logon has checked the key & found that the system is configured for more workstations or servers than are allowed by the key . Run netgen to reduce the number of servers and/or workstations to permitted level .

"UNAUTHORISED FAULT TOLERANCE SOFTWARE ON SERVER"

Logon has checked key & found that the shadow software is installed when it is not enabled in the key . Run netgen for the server in question , disable shadow software , do disk production for the server & reboot server .

CACHE

80386 machines without an F1 (or later) Step 206 chip may experience reliability problems with Ethernet & Cache both loaded such as the SCSI device disappearing .

ETHERNET CARDS

It has been reported from the supplier of the Apricot Ethernet card that the chip Toshiba TM 2063 at location U5 is faulty & may cause intermittent problems . Apricot Customer Services (ie Maintenance) have replacement cards .
Note There are no problems with the alternate chips , Toshiba 2088 or Fujitsu 8464

XEN-I 286 & VX 286 RANGE

If you are to run Ethernet the remote boot option in the CMOS RAM needs to be disabled using SETUP.EXE . Otherwise the terminal may hang .

WINDOWS386

Do not access network drives from old applications running under Windows 386 on OMNINET networks. There is no such restriction for ETHERNET.

WHO ALL / NBSTAT / NETGEN Check Node

Nbstat is a generic version of the Omninet NETSTAT diagnostic program which will operate on any Netbios network . To run this program each workstation or file server must have Netbios loaded . It sends a Netbios remote adapter status to each station in turn . Stations which respond are reported as active , those which fail are inactive .
Who , Nbstat & Netgen check node are now true netbios applications. **Do not issue any of these commands whilst there is any other Netbios commands active elsewhere . Netbios will crash hence the workstation and/or file server will fail**

DATAGRAMS

There is a location dependant bug in ENETBIOS (Ethernet's Netbios) initialisation which has been seen to to give rise to " Transport Receive Datagrams failed " message . The location can be changed & hence avoid the problem by increasing/decreasing the buffer statement in config.sys of the workstation .

NETGEN

Netgen.exe can now be run on the file server if you have screen & keyboard providing SERVER.SYS is not loaded . However the option to create workstation boot disks does not work satisfactorily.

Before you can run Netgen on a monochrome VGA monitor you need to have run "vgaplus color". However highlighted fields are not visible.

C2X BOOT DISKS

The disk currently shipped with the C2X kit is for VX-Net 2 & NOT VX-Net 3 . Hence if that disk is used for bootstrap then during logon the following message appears:-
" can't find z:\ibm\command.com "
The reason is that VX-NET3 has command.com in z:\dos32\ibm & z:\dos33\ibm so generate the C2X bootstraps disk on an Apricot 5.25 " disk Xen-i.

OMNINET2.SYS V3.0.0

The default number of wait states used for DMA is now 2 as this is required by 80386 machines . This can be altered by the /x parameter . Also Omninet2.Sys now correctly determines whether it is the first driver being installed in an IBM AT compatible eg Compaq in which ROM starts at F000h this fixes a problem of poor performance in these machines

AEMM.SYS & AMLOAD

The memory mapper AEMM.SYS can now co -reside with AMLOAD but if you chose this option then there is less memory available than if you just use AMLOAD on its own . AEMM.SYS requires 64k minimum . Syntax is in Technical Bulletin 20 .

RAMDRIVE.SYS

To use ramdrive in expanded memory on a 1 Mbyte 286 machine it is necessary to have two additional entries in the workstation's CONFIG.SYS as listed below :-
        DEVICE=AEMM.SYS /P: ,4 /R
        DEVICE=RAMDRIVE.SYS 256 512 64 /A
In addition the workstations AUTOEXEC.BAT file MUST load REDIR.EXE & XPORT.EXE in conventional memory ie not with AMLOAD

NETDISK.SYS

Error "Bad or missing B:netdisk.sys " appears when booting VXWS (or any other workstation using IBM common disk & above memory option selected
Solution - softcopy NETDISK.SYS from \dosutils\dos32 to \netwkmgr\msdos32i.dsk & msdos33i.dsk & then regenerate workstation boot disks.
Syntax -
        ▷ cd \netwkmgr
        ▷ softcopy \dosutils\dos32\netdisk.sys msdos32i.dsk
        ▷ softcopy \dosutils\dos32\netdisk.sys msdos33i.dsk

AEMM.SYS

Error "Bad or missing B:aemm.sys " appears when booting VXWS (or any other workstation using IBM common disk & above memory option selected)
Solution - softcopy AEMM.SYS from \dosutils\dos32 to \netwkmgr\msdos32i.dsk & then regenerate workstation boot disks.
Syntax -

```
r> cd \netwkmgr
r> softcopy \dosutils\dos32\aemm.sys msdos32i.dsk
```

COMMON DISK

A workstation booting & using the common disk will occasionally hang & require re - booting. This occurs when there are a number of workstations accessing common disk simultaneously .

XEN WS

If a Xen WS is defined in Netgen the workstation will crash as soon as a key - press is required after it is booted onto the network ie at Logon or when setting the network time
Solution - Take a copy of STAT.DSK from VX-Net 1c or MF Rel 7 & copy it over the new STAT.DSK from VX-Net Rel 3.03 then delete the STATxx.DSK where xx is workstation number
Run Netgen again & recreate the workstation boot disk for station xx

XEN - APRICOT ARCHITECTURE

When configuring XEN (Apricot Architecture) with NETGEN the screen driver types are NOT copied into config.sys nor autoexec.bat .
Add the line to config.sys:-
eg   device=b:640200ec.sys to a Xen WS with midres colour
Add the line to autoexec.bat before logon:-
eg   640200cg   to a Xen WS with midres colour
However the files config.sys & autoexec.bat on diskless terminals will need to be softtyped out of the STATxx.dsk (where xx is the station number) , then softcopied back .

MINSES

Minses vr3.0.0 correctly increments time after midnight but the date remains the same when accessing date/time over the network.
Solution - Downgrade Minses to the previous version vr1.5.4 off VX-Net 1c (ie Release 2) or use later version of MINSES.SYS Vr 3.0.1 if the network is to be left on overnight

ETHERNET.SYS

Ethernet.sys is the low level device driver for the Apricot Ethernet card . There are extra parameters to enable changes to the IO address , memory address & interrupt . These settings may be altered for other IBM PC or AT compatibles to enable them to work .

/IOADD:xxxx Specifies the i/o address at which the Ethernet interface card may be found to be xxxx, which is a hexadecimal number in the range 0x0200 .. 0x03e0. This must correspond with the switch setting on the Ethernet card itself , & so the value of xxxx must be divisible by 0x20
Default is 0280h

/MEMADD:xxxx Specifies the address of the shared memory used by the Ethernet interface to be xxxx:0000 , where xxxx is a hexadecimal number in the range 0xA000 .. 0xF000 . Note that the value must be divisible by 0x200
Default is EE00h
Note:- If you have VGA, avoid C000 - C7FF

/IRQ:d Specifies the hardware interrupt used by the Ethernet interface to be d , which is a decimal number in the range 2 .. 7 . Note that this must correspond with the switch settings on the Ethernet

card
Default is 3

eg To enable a Compaq III to work
1.   set jumper W2 to link pins 5-6 (interrupt request level 5)
2.   add /MEMADD:C200 /IRQ:5 switches to the ethernet.sys line

If your compatible does not show an Ethernet node address starting with 00-00-C0 then you will need to alter some or all of the above parameters . (The default ethernet settings on an Amstrad PC do not need to be altered !!!!) In the technical support department we may have the settings for other clones if not it will be the responsibility of the installer to supply the technical information with a hardware reference manual.

VXWS VGA COLOR (2MB RAM)
running WINDOWS2 & EXCEL across NETWORK

The following configuration has been tried and tested and is known to work !

CONFIG.SYS
lastdrive=z
country=44
files=10
buffers=10
DEVICE=AEMM.SYS   /P:D000 /R
device=omninet2.sys
device=mscalc.sys /uk

AUTOEXEC.BAT
xport
netbios
AMLOAD /M:C000,CFFF MINSES
gettime
redir /L:10 /S:2
logon

       This configuration gives the following memory:

       DOS = 449K bytes free

       Windows = 247K bytes Conventional
              = 1376K bytes Expanded

       Excel = 33K bytes Conventional
               = 1370K bytes Expanded

(Assuming use of aemm.sys ver 4.0.0 and amload.exe ver 1.5.7)

VXNET 3 Documentation

Below are corrections to the Network Installation Manual

Network Installation Manual / Installing Windows2. (page 20.)

(3). User must be logged on to network in order to run Windows SETUP from a workstation. (SETUP will not run under CONMGR utility.)

The correct procedure is :   **U>R:**

R>cd \uwin2

R>setup

(5). Path to install Windows2.

R:\applic\ibmxxxx\win2 gives error "can't create directory"

Directory r:\applic\ibmxxxx* must be created manually with

R>md   \applic\ibmxxxx

<u>before</u> running Windows SETUP.

(* where xxxx is replaced with monitor type herc,ega,cga,vga)

(1). Mark the W2 application as GENERIC **(MS-DOS) only.**

Mark the WIN2 application as a combination of monitor types :-

HERCULES/MDA, CGA, EGA, VGA only.

Problem

\applic\generic\w2 holds windows applications, pif files, and win.bat

Win.bat contains :-   **cd setup**
setup

In the network this will result in the loading of the **CMOS RAM Setup** utility and not the **WINDOWS Setup** program.

Solution

Attribute win.bat as read/write and then delete the file.

Now when win is typed at the U> prompt the system will look down the path and load win.com.

<u>VX-NET 3.1</u>

1. OVERVIEW

VX - Net 3.1 contains the following new features:

o   support for the Qi range as workstations, including a driver for the on-board Ethernet.

o   support for the Xen-S range as workstations , including a driver for the on board Ethernet.

o   DTC server

o   Apricot network courier server.

o   unserialisation of the Authorisation key for consistency with the Qi environment pack and to simplify production and maintenance operations.

o   Various solutions to VX-Net 3.0 features - see below.

The VX-Net network product contains a number of different components:

VX-Net Network Software
MS-DOS software
Windows Software
DTC server software
Mail server software

Installing VX-Net 3.1   **Make sure that a full backup is made before proceeding.**

1)   Install VX-Net 3.03 as previously accomplished
2)   Update the server boot tracks e.g. FORMAT C:/UA:
3)   Run the install batch file with destination drive (default is drive C) e.g INSTALL C:
4   Update all work   ation boot disks.

It should be noted that the MAIL package is serialised and where inter-mail is used between two networks the serial number must be different on each network.

2   CHANGES FROM VX-NET 3.03

This is an overview of changes that have been made since VX-Net 3.03

2.1   AMLOAD.EXE   VR1.5.8
Supports Qi machines.

2.3.   CONMGR.EXE   VR 3.1.0
Bug fixed which caused loss of correction to the server on Ethernet networks during periods of no screen output.

2.3   CONSOLE.SYS   VR3.1.0
Supports un-serialised authorisation keys and Apricot on-board key holders.

2.4   ENETBIOS.EXE, EXPORT.EXE   VR3.1.1
Reliability of datagram service improved

Remote adaptor status bug fixed, so WHO ALL, NBSTAT, and NETGEN check nodes are now safe.

Network Layer resource reallocation problem fixed. (In previous versions this could give rise to terminals hanging and "beeping "at the LOGON stage)

Improvements to receive any processing

Loopback support added so that LAN Link can now be run in a server.

2.5 ETHER592.SYS   VR3.1.1

This is the low level driver for the Qi and Xen-S on-board Ethernet hardware. It has the same software interfaces as ETHERNET.SYS and thus supports standard EXPORT and ETHERCOM files.

The configuration parameters for MCA systems are taken from the ADF file on the reference disk supplied with the machine.

2.6 ETHERCOM.EXE, ETHERCOM.SYS   VR3.0.2

Enlarged to support 255 NETADDR entries - previously Ethernet networks with more than 64 Nodes could not load ETHERCOM.EXE and so could not use the common disk.

2.7 ETHERNET.SYS   VR3.1.1

/ETHADD: switch now supported

Some reliability modifications made in the area of interrupt handling and initialisation.

"Authorisation key not installed" fixed.

2.8 KEYINSTL.EXE   VR3.1.0

This is a program which displays the contents of an unserialised authorisation key, and optionally merges two such keys into one.

2.9 LOGOFF.EXE, LOGON.EXE, USE.EXE   VR3.1.0

Integration with Apricot security features via /S switch

Screen support is now via direct screen recognition (hardware tests) rather than through the Netgen data file. (for PC/SHARE).

PC/SHARE authorisation keys recognised, and authorisation key error messages tidied up.

Five parameters are now passed to STARTUP.BAT These are (in the following order):-
<user name> <video> <processor> <bus> <dos version>
to allow more sophisticated tailoring of the environment during startup.

2.10 MINSES.EXE   VR 3.0.1

The date will now correctly roll-over at midnight

2.11 MT.EXE   VR3.1.1

Updated to support eight processes, rather than just four. This allows two Ethernet stacks to operate on the same machine (eg for an Ethernet - Ethernet Gateway).

Changes to improve performance on 386 based machines by reducing the interrupt load

Now does an installation check. so cannot be booted more than once. and displays a start up banner.

2.12 NETBIOS.EXE   VR3.1.0

Improvements to receive any processing.

2.13 NETDISK.SYS   VR1.5.7

Remote booting PC/S machines will now connect to MSDOS33I.DSK not MSDOS32I.DSK

2.14 NETGEN.EXE, .000, .001   VR3.1.5

NETGEN allows workstation type of Qi and loads ETHER592.SYS if appropriate. ANSI.SYS and KEYB UK are loaded in place of MSCALC.SYS. The mouse driver is MCAMOUSE.SYS. On Omninet networks, the driver is OMNINET.IBM

NETGEN asks if a Qi workstation has Apricot security features enabled and loads the SECURITY.SYS driver if so. An option is offered to use the security username and password at Network logon time.

NETGEN allows workstation type of Xen-S and l,oads Ether 592.SYS if appropriate. ANSI.SYS and KEYB UK are loaded in place of MSCALC.SYS.

NNETGEN, now split into a resident portion (NETGEN.EXE) and two overlays, with NETGEN.001 handling gateway configuration and NETGEN.000 handling the rest. This prevents out-of-heap space errors occuring with large numbers of users and applications. New limits are that total users and applications must not exceed 350.

NETGEN checks that the authorisation key is installed (warning: this requires an extra vc) and displays the workstation and server limits in the start-up screen.

NETGEN will now configure SFT and IPA3 systems, and various amendments have been made to the Lan-Link and X.25 Lan-Link configurations since VX-Net 3.0

Highlighted fields are now visible on a monochrome VGA screen.

The expanded memory driver now has 286 or 386 options , loading AEMM.SYS or AEMM386.sys respectively.

2.15 OMNINET.IBM   VR3.1.0

This driver now supports the Corvus MCA omninet card in addition to the ADF file supplied with the card.

2.16 2.16 PASSWORD.EXE   VR 3.1.0

this program is functionally equivalent to PASSWORD in VX-Net 3.0. With VX-Net 3.1 , the network passwords and Apricot security passwords will have to be changed independently

2.17 SERVER.EXE   VR3.0.1

The maximum number of workstations has been raised to 64.

2.18 SERVER.SYS   VR3.30.2

Supports Qi machines.

2.19 TIMESRV.EXE   VR3.1.0

Ensures the date is maintained when the server is left switched on but idle for two days or more.

2.20 UPDATE31.EXE   VR3.1.0

This is a program which modifies a VX-Net 3.0 Authorisation key and software into an unserialised VX-Net 3.1 system. The VX-Net 3.0 key must be properly installed for this procedure to work. Additional key settings such as SFT are preserved.

2.21 XPORT.EXE   VR3.1.0

XPORT has been changed in line with MT to allow correct operation of Windows 386 on Omninet Networks.

XPORT now has an additional command line to configure the credit size. The syntax is /MCRED[:N] where N is the desired credit size in packets. This is designed for sites experiencing "Xport Internal Error 6" messages. If setting nbufs to the maximum value does not eliminate this message, then configuringXPORT at the server with lower MCRED values, (such as 3 or 4) should do so.

VX-NET 3.11

1. Overview

o   support for the Qi range as server

o   support for Xen-S range as server

o   support for the Qi range as workstations, including a driver for the on-board Ethernet.

o   support for the Xen-S range as workstations , including a driver for the on board Ethernet.

o   remote boot of Xen-S on Ethernet

o   remote boot of Xen-S on Omninet (add in card)

o   DTC server

o   Apricot network courier server.

o   unserialisation of the Authorisation key for consistency with the Qi environment pack and to simplify production and maintenance operations.

o   Various solutions to VX-Net 3.0 and 3.1 features - see below.

The VX-Net network product contains a number of different components:

VX-Net Network Software
MS-DOS software
Windows Software
DTC server software
Mail server software

Installing VX-Net 3.1   Make sure that a full backup is made before proceeding.

SOFTWARE
The software consiste of one 3.5" HD Upgrade disk or two 5.25" HD Upgrade disks.

The VX-Net 3.11 upgrade disk is intended to replace the VX-Net 3.10 Upgrade disk. It therefore contains all the files that are on the VX-Net 3.10 Upgrade disk.

There are the following changes between VX-Net 3.10 and VX-Net 3.11:

To install the software just:
1)   stop the server.
2)   make sure the network software is version VX-Net 3.03 or VX-Net 3.1. This is accomplished by listing VERSION on server root directory, i.e. R>TYPE VERSION

3)   Run the install batch file from drive A and state destination drive (default is drive C) eg INSTALL C:
Note: Do not run install batch file from any other drive unless you amend the batch file with references to drive A
4)   Update all workstations (operating system, IO.SYS should be 3.30.1 or later) with Netgen
Note: All remote boot workstations will be using DOS 3.3. If they are not delete the disk files eg R>del stat11i.dsk and reproduce them. [Recommended even if new network site. Delete STAT10I.dsk if you wish to use a remote boot workstation No. 10.]

Changes from VX-NET 3.1

2.1   AMLOAD.EXE   VR1.5.9   14/12/88
recognises above memory on Qi and Xen-S machines after CONTROL-ALT-DEL reboot. Will use all 192 Kbytes of memory between C000 and EFFF on a Xen-S (previously used only C000 to DFFF)

2.2   BOOTSRV.EXE   VR3.1.1   16/12/88
Changed to support Xen-S remote booting.

2.3   CONSOLE.SYS   VR 3.1.1   2/12/88
Reads on-board authorisation keys correctly.

2.4   ENETBIOS.EXE, EXPORT.EXE   VR3.1.1   19/12/88
Changes to EXPORT to improve the reliability of Windows/386 on Qi, and to improve the reliability of of Qi/Xen-S servers systems. ENETBIOS version number updated for consistency.

2.5   ETHER592.SYS   VR3.1.2   19/12/88
Changed to improve the reliability of Windows/386 on Qi, and to improve the reliability of QI/Xen-S servers systems. Problem with moving the mouse under Windows and accessing the network resolved. Changed to support Xen-S remote booting.

2.6   ETHERCOM.EXE, ETHERCOM.SYS   VR3.1.1   16/12/88
Changed to support Xen-S remote booting

2.7   ETHERNET.SYS   VR3.1.3   19/12/88
More diagnostic statistics maintained.

2.8   LOGOFF.EXE, LOGON.EXE, USE.EXE   VR3.1.2   9/12/88
LOGON changed to recognise VGA on Qi and Xen-S machines properly. LOGON /S now works correctly on Qi machines with security enabled.
Version numbers of LOGOFF and USE updated for consistency.

2.9   MT.EXE   VR3.1.3   11/12/88
version number updated for consistency with EXPORT and NETBIOS.

2.10 NETDISK.SYS   VR3.1.1   16/12/
Changed to support Xen-S remote booting.

2.11 NETGEN.EXE, .000, .001   VR3.1.7   9/12/88
No longer complains if run on a workstation with a Qi/Xen-S environment authorisation key fitted. Some Qi server disk production problems resolved. Qi workstation disk production problem fixed, which put wrong Ethernet driver (Ethernet.sys not Ether592.sys) on a Qi boot disk if the security auto logon-feature has never been selected

2.12 OMNINET2.SYS   VR3.1.1   16/12/88
Changed to support Xen-S remote booting.

2.13 SERVER.EXE   VR.1.1   12/12/88
Problem resolved which caused printing to stop if more than 32 files were open.

2.14 SERVER.SYS   VR3.30.3   16/12/88
Recognises above memory on Qi and Xen-S machines after CONTROL-ALT-DEL
reboot. Moves ROMBIOS data area at 639K on SCSI Xen-S machines.

2.15 MSDOS SOFTWARE
The MSDOS software has been updated as follows:

1)   New version of AMODE.EXE supplied ,   VR1.0.1   12/11/88

2)   New version of SETUP.EXE supplied,   VR 1.2.3   12/11/88
3)   AEMM386.SYS Vd4.00.0 is supplied with VX-Net 3.11 but not automatically installed.
Therefore by default a user will get the VX-Net 3.03 version, Va3.20.0. The latter version has
LIM 4 support but in its default setting (as used on NETGEN produced disks) uses more above
memory leaving less available for AMLOAD. These defaults can be overridden by command
line switches if the user wishes to use LIM4

RESTRICTIONS

The following restrictions apply to VX-Net 3.11.

-      Qi machines will not operate correctly as file servers unless they are Rev 08 hardware
level or higher. This revision level is located at the rear of the Qi in the "REVISION DP"
number . The third and fourth digits indicate the revision level eg number 1108110 determines
level08

-      On 1 Mbyte Qi and Xen-S machines there are two possible memory setup options:
Rombios shadowing enabled, extended memory =0
Rombios shadowing disabled, extended memory =384
In order to run AMLOAD, the first option must be selected, i.e. Rombios shadowing enabled.

To do this on a:-
               Xen-S run SETUP and enable ROM SHADOWING

               Qi use the Qi reference disk. The instructions are as follows:

               select Configuration option
               select Change for Internal Options
               scroll down to Apricot BIOS ROM SHADOWING
               then hit carriage return
               select enable, hit carriage return
               Hit F10 function key to save.

-      Remote booting Xen-S machines should have ROMs VR1.2.5 or later.
earlier ROMs cannot remote boot and run Windows/386, and suffer from problems on Omninet
when the latest NETDISK.SYS is loaded.

-      PASSWORD will not affect the Apricot Security password. Network passwords and
security passwords must be changed separately.

-      A NETGEN produced boot disk for a machine with a Triple X modem and Ethernet will
fail as NETGEN uses the default settings and both drivers use IRQ3 by default. A suitable
work-round is to edit CONFIG.SYS and set Ethernet.sys to a different IRQ, eg /IRQ:7 (or any
other free IRQ). The jumper must also be moved on the Ethernet card.

-      The NETGEN limits on VX-Net 3.11 are Users + Applications < 295, before out-of-
heap-space errors are encountered.

-      NETGEN cannot be run on a machine with SERVER.SYS loaded . Thus to run it on a
file server after initial installation requires booting from a floppy or editing CONFIG.SYS.

- NETGEN and LOGON will only support Windows1. NETGENing a user as a Windows user will automatically load the correct version of Windows 1/03 for the current workstation. Windows 2 and 386 users should be NETGENed as MSDOS users.

In most cases the user's STARTUP.BAT file can be made to load Windows automatically. LOGON passes a number of parameters to this file to aid this process, including processor type to allow dynamic selection of Windows/386 on 386 machines.

The only difficulties are if the user wants to manually choose between Windows 2 and Windows/386, or if the user can login to workstations of the same screen types but different mice. In these cases either the user must explicitly load the desired version, or the user must be prompted by a simple batch file which will select and load the appropriate version .

XEN-S/QI ON ETHERNET NETWORKS

The master disks from VX-Net 3.03/VX-Net 3.11 workstations and servers do not include: Device =Ether592.sys in the CONFIG.SYS [nor does the server hard disk once all the master disks have been installed.]

The recommended procedure is to run NETGEN on the file server. Set up file server and workstations and do disk production.

Reboot server and workstations and note the unique Ethernet addresses, eg. 00-00-49-00-11-C9.
Go back to Netgen and enter he node addresses and redo server disk option. Once server has rebooted all workstations should enable users to log on.

Note Before running NETGEN on a server it is advisable to:-

1) boot from a Dos 3.3 floppy disk on server
2) Type C: <CR>
3) Type setpath <CR>
4) Type cd\netwkmgr <CR>

WINDOWS ON VX-NET 3

Windows issued on VX-Net 3 are:-

    Windows version 1.03
    Windows version 2.03
    Windows version 2.03/386

Instructions to set up the different Windows are in the Technical News Bulletin under section 3.

Windows issued on Xen-S environment pack are:-

    Windows 2 version 2.1
    Windows 386 version 2.1

Windows issued on Qi environment pack is:-

    Windows 386 version 2.1

If you wish to install Windows on the network for the Qi or Xen-S, create the application area within Netgen and allocate it as a resource eg, drive X as \APPLIC\IBMVGA\WIN21. Stop the server and reboot from an "ordinary" Xen-i boot disk. Run the Windows install program as if the server is a stand-alone machine. Remember to place windows programs in correct directory eg \APPLIC\IBMVGA\WIN21. Once completed reboot server and workstations.

If you are adamant that you want to run Windows 2 versions 1.03 on Qi or Xen-s they will work, however if you have a Logitech mouse Windows must be setup with Microsoft mouse drivers.

3.2.3 Network Program Specifications and Release Histories

3.2.3.1 PCSHARE OVERVIEW

PC/Share is a low cost, simple network product for small numbers of workstations.

Features:
- PC/S range workstations or PC/286 with Lan kit only
- 1 server, 286/30 or 286/45, with screen and keyboard
- File service and up to 2 shared printers
- Omninet II only
- MSDOS 3.3
- Windows 2.03 pre-configured for Apricot mice and Hercules, EGA or VGA
- MS-NET Server and Redirector
- Windows based configuration utility (PCSHARE.EXE)
- LOGON
- PASSWORD
- USE
- Time synchronisation
- comes pre-configured with "manager" user
- each user has pre-configured drive letters
- Z: system software
- U: user specific data
- W: common data
- S: generic application software
- T: screen specific application software
- authorisation key protected

Limitations
- No NETGEN
- No support for non-PC/S machines
- No disk caching or disk shadowing
- No console manager - server must have screen and keyboard
- No Ethernet
- Workstation node numbers must be consecutively numbered from 10 upwards
- All workstations must remote boot (as no NETGEN disk production)
- No support for LAN-LINK or X.25 LAN-LINK
- Designed to support small networks of up to 12 stations

3.2.3.2 AMLOAD.EXE Program Specification

AMLOAD.EXE is a shell to allow a specified Terminate and Stay Resident (TSR) program to be run in memory between 640k and 1 Meg which is outside the normal MS-DOS 640K limit. The amount and position memory available for use in this manner depends upon the type of machine and what video and other add on cards are present.

Invocation:-

    AMLOAD [/M:ssss,eeee] <program name> [program arguments]

The /M switch specifies which memory segments are available for use by AMLOAD. This will only need to be specified if a conflict could arise as is often the case with network cards. If no memory is specified then AMLOAD will try to use all available memory.

Most Terminate and Stay Resident (TSR) programs may be loaded by AMLOAD. The memory allocated to the program is permanently mapped into system memory and is therefore useable by interrupt service routines within the program.

Problems may be found in the following areas:-

a) Some programs are not too clever when run in small memory environments. Executing a program with AMLOAD is like running the program in a machine with only 64k of free memory for example.

b) Programs which use ROM BIOS call to find top of memory or use some other strange allocation scheme may not work correctly.

c) Programs which attempt to hook the MS-DOS system interrupt (Int 21h) without using the MS-DOS get and set interrupt vector calls will not work correctly.

AMLOAD and Expanded Memory

AMLOAD will coexist in most cases with Expanded Memory.

The AEMM.SYS expanded memory driver must be used with the /R switch to work in conjunction with AMLOAD. See the AEMM.SYS program specification for more details on this.

286 Memory Maps

EMM Only   AMLOAD only EMM and AMLOAD

```
F000  | ROM  |
      |------|
      | Free |
E000  |------|
D000  | EMM  |   | AMLOAD |   | AMLOAD |
C000  |------|   |        |   | EMM    |
      | VIDEO|
A000  |------|
      |      |
      | RAM  |
      |      |
```
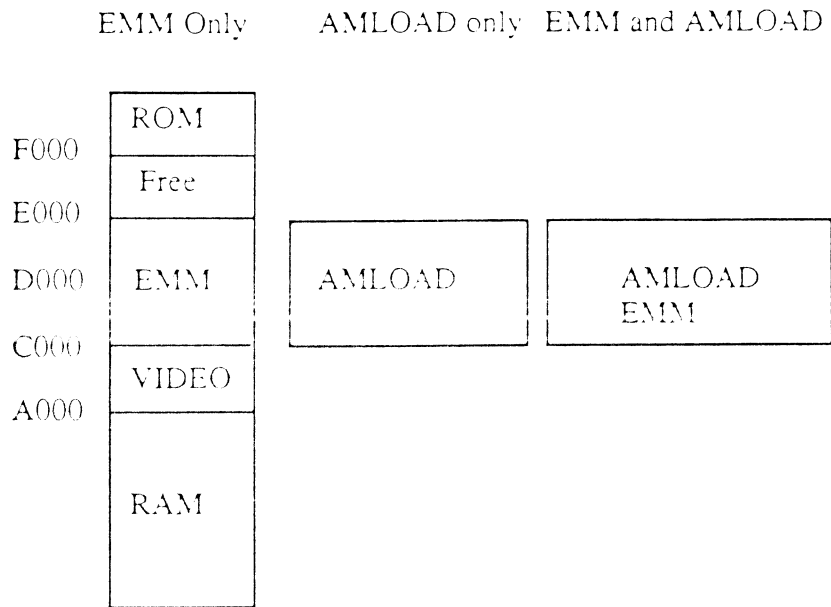
If an EGA video card is fitted then the EGA ROM BIOS will occupy the memory between C000 and C400. As EMM requires a minimum of a 64k windows the memory left for AMLOAD will be restricted to 48k.

386 Memory Maps

EMM Only   AMLOAD only EMM and AMLOAD

```
F000  | ROM  |
      |------|
      | Free |
E000  |------|
D000  | EMM  |   | AMLOAD |   | AMLOAD |
C000  |------|   |        |   | EMM    |
      | VIDEO|
A000  |------|
      |      |
      | RAM  |
      |      |
```
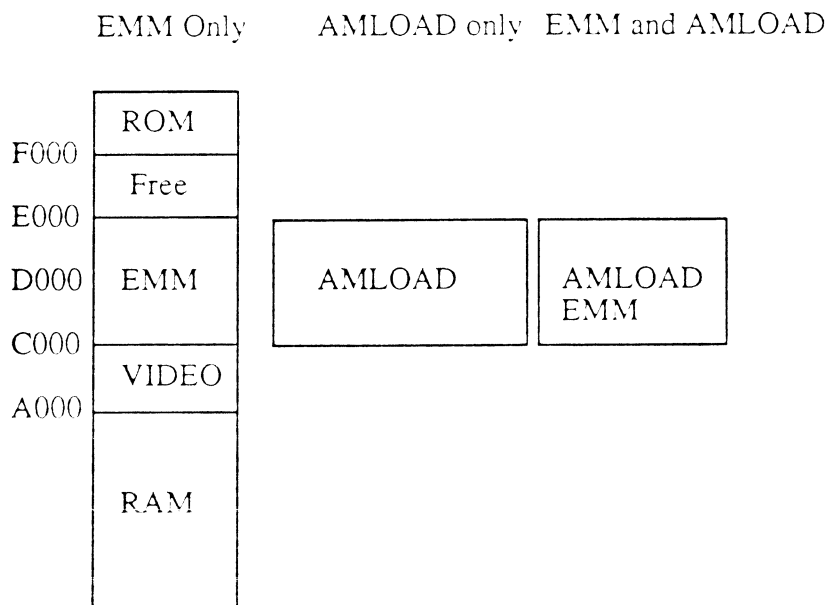
Note the above scheme applies to both AEMM.SYS when used in conjunction with an Apricot AM card and to AEMM386 when used to emulate expanded memory with 386 extended memory.

AMLOAD Exit codes

The following return codes are available from AMLOAD. The most common use of the return code is to allow a batch file to try to run the program normally if it was not possible to AMLOAD it.

Return Code	Meaning
0	OK
1	Other error
3	No memory available for AMLOAD

Messages

The following messages may be displayed by AMLOAD :-

Can't find <PROGRAM NAME>

This will displayed if the program specified cannot be found. Note AMLOAD does not use the PATH environment variable to search for the program.

Not enough memory to run <PROGRAM NAME>

There was insufficient memory left allocated to AMLOAD to execute the specified program. AMLOAD will terminate with a non zero return code to allow a batch file to run the program again in the standard manner.

<PROGRAM NAME> did not stay resident.

This message will be displayed if the program exited by a means other than an MS-DOS Terminate and Stay Resident (TSR) function call. In this case AMLOAD will not have allocated any memory for the program. This normally occurs for one of three reasons.

a) The program specified was not a Terminate and Stay Resident program.

b) The program detected some configuration problem and terminated without installing and staying resident.

c) The program did not have sufficient memory allocated to it by AMLOAD and terminated without installing.

Note: Many programs do not detect this last condition and simply assume that sufficient memory exists. This may either result in a system crash or in the following error message.

Not enough memory to run <PROGRAM NAME>, system halted

This message will result if a program executed a Terminate and Stay Resident function call requesting more memory than was available to AMLOAD. The system is halted to prevent erratic behavior.

Can't run amload, above memory not initialised

This message will occur if a hardware problem exists on the machine such that AMLOAD was unable to access the required memory.

Invalid parameter specified

One of the arguments given to AMLOAD was invalid, check the command line.

nnK Bytes available at xxxx:n

This message will be displayed the first time AMLOAD is run. It informs the user how many kilobytes of memory are available to AMLOAD ('nn') and the segment address of the memory ('xxxx').

AMLOAD.EXE Release History

Changes since Release Version 1.5.5

. AMLOAD will now use the mappable memory between 0C000H and 0D000H on Apricot 386 machines.

. AMLOAD will co-exist with EMM drivers which may try to utilise the same memory windows.

. A new switch '/M' has been provided to allow the memory area used by AMLOAD to be specified. This may be required to avoid conflicts with memory mapped network cards etc.

. Programs which use the MS-DOS get and set vector calls to hook Int 21h are now supported.

. AMLOAD will now execute .COM files. This will allow the IBM Token Ring network software to be used with AMLOAD.

. AMLOAD now correctly uses the full range of memory on 386 machines.

. AMLOAD will allow use of the first Apricot AM card for high loading on IBM and other clone machines.

. AMLOAD will correctly find and co-exist with expansion ROM's at any address. Previously only EGA ROM's were looked for.

Changes since Release Version V 1.5.6

. AMLOAD will now work after a CTRL-ALT-DEL reboot on PC/S machines. Previously it would report no memory available.

. AMLOAD will now correctly identify XEN-i machines with exactly 640k of memory (ie not 1 Megabyte) and not attempt to use mirrored RAM above 640k for loading code.

AMLOAD.EXE Latest version VR 1.5.7

3.2.3.3 BOOTSRV.EXE Program Release History

Changes since Release Version VR1.5.5

. Now works correctly with MS-DOS 3.30 on the server.

. Allows workstations to select MS-DOS 3.30 as the operating system version.

Changes since Release Version Va1.5.6

. Now calculates the date correctly in leap years when initialising Apricot XEN-WS and XEN-i WS workstations.

BOOTSRV.EXE Latest version VR 1.5.7

3.2.3.4 CACHE.EXE Program Specification

The Apricot disk cache utility increases disk performance by storing frequently used information in fast access RAM.

Features:-

.   The entire File Allocation Table (FAT) is stored in RAM.

.   Writes to the FAT are delayed until the file is closed to reduce the number of disk I/O operations. (Only if SHARE.EXE is loaded.

.   Disk information is cached with the Least Recently Used (LRU) cache being discarded when required.
.   Read operations that are sequential are extend to the end of the current track in anticipation of the next request.

.   Uses Extended, Expanded or Standard memory as specified in the command line.

.   If no memory is specified then Expanded memory will be used if present and failing that extended memory. If neither is present then the cache will unload with an error message.

.   Cache may be installed on up to twenty MS-DOS logical disk drives. If no drive is specified then the cache will install on all non-removable (winchester) drives.

CACHE.EXE Release History

Changes since Release Version VR3.20.0

. Now correctly installs on loadable device drivers.

. Now works correctly with drives who do not have exactly 2 FAT's for example drives provided by NETDISK.SYS.

. The EMM (Above memory) mode now works correctly.

. Corrected possible problem with corrupt disk if CACHE.Exe loaded after SHARE.EXE. NETGEN did not do this.

. Fixed problem with working with Apricots 8042 keyboard controller. Caused keyboard lock up.

. Will now work on floppy disk drives if no disk is present in drive when cache installed.

. Will not attempt to install on drives that have been substituted (SUBST) or other such things.

. Possible problem with multiple drive support fixed.

. Removed support for Apricot extended memory.

. Major change to buffer logic. We now support multiple sectors per buffer allowing much more efficient use of DOS memory. This also allows more cache memory to be used before running out of table space.

. Improved cache read ahead logic.

. If we detect some internal malfunction the cache is totally disabled and the operation is retried.

. We now detect errors in using extended or expanded memory drivers.

. CACHE.EXE will coexist with Microsoft RAMDrive version 2.01 and later. It will also operate with Windows/386 providing cache does not allocate all of extended memory.

. Several changes made to operate correctly with MS-DOS 3.30 and floppy disk drives.

. Cache will now work in conjunction with the disk shadowing system.

. Cache will now install on up to twenty drives. Attempting to install on more than four drives used to crash the system.

. Cache now works in conjunction with Windows/386

. Invalid disk change errors when cache is enabled on a floppy drive now return the correct volume ID.

. Performance improved by changing our hashing algorithm and optimising the critical code path.

CACHE.EXE Latest Version VR 3.30.0

3.2.3.5 CONSOLE.SYS Program Release History

Changes since Release Version VR1.5.4

. The console driver has been changed to be more generic and call the old console device rather than replacing it. This reduces its size, and solves problems with the function key handling.

. Modifications have been made to stop character corruptions appearing in lengthy screen outputs (e.g. DIR of large directory).

Changes since Release Version VR3.0.2
. Console.sys now only supports an unserialised authorisation key support has been added for the Apricot on-board key holders as well as the parallel port key holders.

CONSOLE.SYS Latest version VR 3.0.4

3.2.3.6 ETHERCOM.EXE and ETHERCOM.SYS Program Specification

ETHERCOM.SYS is a low level driver which provides the support for Disk Service on Ethernet in the workstations. It must be loaded after ETHERNET.SYS and before NETDISK.SYS. ETHERCOM.SYS converts the ETHERNET.SYS interface into a Omninet style interface as expected by NETDISK.SYS

It has no command line switches.

ETHERCOM.EXE provides the support for Disk Service on Ethernet at the server. It is exactly the same file as ETHERCOM.SYS but has to be loaded as a .EXE file because it reads the NETADDR file. ETHERCOM.EXE must be loaded after ETHERNET.SYS and before BOOTSRV.EXE. It converts the ETHERNET.SYS interface into an Omninet style interface as expected by NETDISK.SYS.

It has one command line parameter giving the pathname of the NETADDR file, but defaults to the correct setting for a NETGENned VX-NET 3 network and so should not need to be changed.

3.2.3.7 ETHERNET.SYS Program Specification

Ethernet.sys is the low level device driver for the Apricot Ethernet card . There are extra parameters to enable changes to the IO address , memory address & interrupt . These settings may be altered for other IBM PC or AT compatibles to enable them to work .

/IOADD:xxxx Specifies the i/o address at which the Ethernet interface card may be found to be xxxx, which is a hexadecimal number in the range 0x0200 .. 0x03e0. This must correspond with the switch setting on the Ethernet card itself , & so the value of xxxx must be divisible by 0x20
Default is 0280h

/MEMADD:xxxx Specifies the address of the shared memory used by the Ethernet interface to be xxxx.0000 , where xxxx is a hexadecimal number in the range 0xA000 .. 0xF000 . Note that the value must be divisible by 0x200
Default is EE00h
Note:- If you have VGA, avoid C000 - C7FF

/IRQ:d Specifies the hardware interrupt used by the Ethernet interface to be d , which is a decimal number in the range 2 .. 7 . Note that this must correspond with the switch settings on the Ethernet card
Default is 3

eg To enable a Compaq III to work
    1.   set jumper W2 to link pins 5-6 (interrupt request level 5)
    2.   add /MEMADD:C200 /IRQ:5 switches to the ethernet.sys line

If your compatible does not show an Ethernet node address starting with 00-00-C0 then you will need to alter some or all of the above parameters . (The default ethernet settings on an Amstrad PC do not need to be altered !!!!) In the technical support department we may have the settings for other clones if not it will be the responsibility of the installer to supply the technical information with a hardware reference manual.

3.2.3.8 LOGON.EXE Release History
LOGOFF.EXE Realease History
USE.EXE Release History

Changes since Release Version VR1.5.3

. The appropriate printer driver is now added to ASSIGN.SYS for GEM.

. Logon terminates and stays resident rather than spawning command.com, it is removed by the logoff utility (exit no longer works).

. The keyboard flush before the password prompt has been removed to speed up logging on The flush before the user name prompt is sufficient to prevent the use of piping and/or redirection to break network security.

. Support has been added for the Amstrad PC-Clone.

. When run from an IBM clone, the screen type is determined from WKSTAT.DAT from the data entered from NETGEN.

. The file \\main0\netwkmgr\motd.txt is output to workstation screens during logon, it is displayed in a similar way to 'MORE', and concludes with the prompt :-

—CONTINUE—

This final prompt can be disabled by inserting a tilde character as the first character in the file.

. Control-C checking has improved, it should no longer be possible to ^C out of logon but still have network connections.

. LOGON and USE have been updated to a new and enhanced specification. The main area to be changed is the screen presentation. Other changes have been made to use to allow USE to imply connections from the USER.CON file to make the command line interction with USE simpler. As a security measure the user is now not allowed access to connections which are not specified in his USER.CON file.

Changes since Release Version VR1.5.4

. USE now correctly reports the drive permissions for all drives

Changes since Release Version VR1.5.5

. An undocumented switch is supported by LOGON to disable the message of the day feature. This allows fully automatic logon of workstations for X25 Lan Link CSU's

Change since Release Version VR1.5.6

. LOGON determines the station number by searching the NETADDR file for a matching address, it no longer assumes that the network node number and station number are the same.

. LOGON sets the computer-name as STATOnnn not WKSTATnn as before.

Changes since Version 3.0.2

. Screen support for VGA is now enabled. Differentiation between EGAs and VGAs is done by scanning the screen RAM for 2 of the VGA-only fonts.

. If logon failed to connect to MAIN0 to check the authorisation key in previos versions, 'Authorisation key not installed' was reported. This situation will now produce a 'Cannot connect to MAIN0' error.

LOGON.EXE Latest Version VR3.0.3
LOGOFF.EXE Latest Version VR3.0.3
USE.EXE LAtest Version VR3.0.3

3.2.3.9 MINSES.EXE Release History

Changes since Release Version VR1.5.5 2nd Sep 87

. Minses has been changed to retry calls that fail with NETBIOS error of 'Remote Computer Not Listening.' A failed call will be retried up to 10 times. This change was made to improve the reliability of repeated connects and disconnects (via USE in a batch file) and also of PASSWORD. These would occasionally give "Cannot connect to .. " errors.

Release Version VR3.0.0

Changes since Release Version VR3.0.0 1st. April 1988.

. Minses times the duration between beeps and the elapsed time of pending network requests. It has been changed so that it no longer relies on INT 1A (Read System Timer Time Counter) to measure time. The area of low RAM that contains the count maintained by the BIOS INT 1A handler is now read directly. This will cure the problems that occurred by the original code mishandling the count rollover flag ; typically incorrect date handling.

MINSES.EXE Latest Version VR3.0.0

3.2.3.10 MODEMRDR.SYS Program Specification
MODEMSRV.EXE Program Specification
MODEMUSE.EXE Program Specification

These programs provide sharing of remote modems across an MS-NET network:

MODEMSRV.EXE & MODEMRDR.SYS function together to map local modem commands to a shared network modem.

MODEMUSE.EXE enables a user to dedicate a network modem for his own use (eg. to enable auto-answer calls to be set up).

MODEMUSE.EXE Release History

Changes since Release Version VR1.5.4

. Modemuse will not hang if used when modemrdr.sys has not been installed.

. Modemuse has been changed to print out the progress it is making as it scans through the possible servers.

. Modemuse now returns an ERRORLEVEL value to indicate for the use of batch files what has happened. The errorlevels are as follows:

1 No network or redirector loaded ie no netbios etc, or no Modemrdr.sys
2 No Modemsrv on the network
3 There is a Modemsrv on the network but the station is not attached to it, ie the station is still in HUNT MODE.
4 The station is not in HUNT MODE, but is not attached to the Modemsrv.
5 The station is not in HUNT MODE and IS attached to the server.

MODEMUSE.EXE Latest Version VR3.0.0

3.2.3.11 MT.EXE Program Specification

MT.EXE is an executive program which schedules the Ethernet software from the timer tick.

On 80286 machines MT hooks the main system timer interrupt, INT 08h. It cannot do this on 80386 machines however due to conflicts with Windows 386, and so it hooks the secondary timer at INT 70h and INT 15h on these machines. The program configures itself dynamically, and so the same version is used on all machines.

It has no command line switches.

MT.EXE can be loaded into above memory using AMLOAD.

3.2.3.12 NBSTAT.EXE Program Specification

NBSTAT.EXE is a generic version of the Omninet NETSTAT diagnostic program which will operate on any NETBIOS network. It runs at NETBIOS level and reports on which workstations are active on the network .

NBSTAT works through the NETADDR file, sending a NETBIOS REMOTE ADAPTER status to each station in turn. Stations which respond are reported as active, those which fail to respond are reported as inactive.

A station must therefore be booted and have NETBIOS loaded for it to be reported as active by NBSTAT.

There is an associated configuration file, NBSTAT.CNF.

3.2.3.13 NETBIOS.EXE Release History

Changes since Release Version VR1.5.3

. Support for network numbers other than zero.

. Support for more than one network.

. CALL/LISTEN timeouts now passed to XPORT.

. Some general performance improvements.

. NETBIOS is now fully re-entrant.

. Compatible with IBM PCnet upto version 1.1.

. Hang up commands are now deferred for up to 20 seconds if SENDS are outstanding on that session.

. Supports an XPORT derived network address mask to compare only the significant parts of network addresses.

. Fault in CALL sequence corrected to prevent occasional infinite time-outs.

. Session ANR routines no longer need to preserve the BP register.

Changes since Release Version VR1.5.4

. SESSION STATUS command now returns correct data.

. ADAPTOR STATUS command now returns correct Number of Pending Sessions, and operates correctly on non-zero Lan numbers.

. Cancelling CALL's and RECEIVE-BROADCAST-DATAGRAM's should now work properly.

. Stack size increased

. Memory allocation checks to prevent large   configurations installing using unavailable RAM.

. Returns with some serious failures more quickly (only retries on INTFACE BUSY).

. Alterations to installation checking for LAN-Link

NETBIOS.EXE Latest Version VR3.0.0

3.2.3.14 NETDISK.SYS Release History

Changes since Release Version VR1.5.5

. Reduced NETDISK in size by discarding initialisation code.

. Maximum number of named drives reduced to 8 to conserve memory.

. Network drives return non removable when applications enquire via the MS-DOS IOCTL call. This stops Windows from trying to format them. It also means that when installing Microsoft WORD it gives the option of installing on a network disk which is not a good idea.

. Write with verify has been removed to conserve space. Few people write valuable data to net disks anyway.

. Will now support MS-DOS 3.30 on PC/S machines.

NETDISK.SYS Latest Version VR1.5.6

3.2.3.15 NETGEN.EXE Release History

NETGEN.EXE Latest Version VR3.0.0

. Use.exe is now copied instead of logon.ovl to cope with the new version of logon.

. When defining a mainframe, the question 'External Winchester YES/NO' has been changed for the question 'Number of hard disk drives'. This eases the specification of additional winchesters and will suit VX systems in the future.

. When assigning resources to users, there is now an option to leave the resource initially disconnected at logon time for use with the new version of use.

. In the resource oprion, the menu selections all use the same dialog for consistant use.

. All .SYS, .COM and .EXE files copied to the floppy disk are now obtained from \\main0\dosutils.

1) Changes for Ethernet:-

. A day one option of network type is requested and the reply is stored in the text configuration file NETSYS.DAT in the NETWKMGR directory. Valid types are Omninet, Ethernet and non-Apricot. The type is subsequently displayed on the startup screen on entry to Netgen. It can only then be changed by entering the 'Configuration' option on the main menu or renaming NETSYS.DAT to NETSYS.OLD.

. If the network type is Ethernet or non-Apricot, only a choice of IBM-compatible hardware is offered.

. For non-Apricot networks, questions such as those requesting omninet/ethernet card types are removed and a disk containing a partial CONFIG.SYS, AUTOEXEC.BAT and other relevent files is requested during disk production. These files are then incorporated in   boot/update disks.

. In the node options, the active/incative separators have been removed to allow for a greater number of nodes to be displayed on the screen. In order to allow for an added number of stations and still

keep stationname down to eight alphanumerics, the station name in the NETADDR file has been changed from WKSTATnn to STATnnnn. The functionality of the active/inactive node option is maintained in the 'Check' menu option. The full node menu options are - Add, Delete, Change, Check, Save and Quit though the Change option does not appear for Omninet networks. The Add and Change menu options allow you to add or alter a six byte (six two-digit hexadecimal numbers) address for each node. This   address is stored in the NETADDR file. You can now use the F1 key to allow the cursor to move up and down the list of nodes. Selecting a node (the space bar) displays its ethernet address in a separate box in the Node dialog.

. Netgen is now a true NETBIOS application. This mostly affects the NODE CHECK option which now checks via NETBIOS Remote Adapter Status calls rather than omninet echo packets. NODE CHECK is now only done when the menu option is chosen by the user instead of it being automatic.

. A 'Configuration' option is now supplied in the main menu allowing saving and restoring of network configurations. The services offered in the sub-menu are as follows:-
          'Backup' saves your network configuration to an eight-character configuration name of your
              choice excluding "Previous" and "Original" which are reserved names.
          'Restore' restores an existing configuration to be your new current configuration. Your
              present configuration is first saved under the name "Previous".
          'Reset' restores your configuration to its original virginal state after saving your current
              configuration to "Previous". The day one question of network type is then displayed.
          'Quit', as always, returns you to the main menu.

. NETGEN can now be run stand-alone on the server to allow configuration of the server for Ethernet or non-Apricot so that stations can be booted. This also means that any user who has access to the \NETWKMGR directory (usually only manager) can now access NETGEN.

. The drivers ETHERNET.SYS, EXPORT.EXE and ENETBIOS.EXE are now used for Ethernet in place of OMNINETx.xxx, XPORT.EXE and NETBIOS.EXE (with appropriate switches).

. ETHERCOM.SYS is loaded on Ethernet stations that have a connection to soft disks.

. The message displayed with format 'Please have your C2X disk ready' has been changed for ethernet to read Xen-i instead of C2X.

2)   Changes for multiple DOS (and WINDOWS) versions:-

. Files are now accessed and copied from the new DOSUTILS directory structure.
          e.g. Z:\DOSUTILS\DOS33\IBM\720340EG.EXE

. Support for setting up of paths for users of WINDOWS 1 has been removed. This has been taken over by logon.

. A new question asking the windows type wanted by the user has been coded into netgen but has been commented out until a decision to implement this has been reached.

. COUNTRY.SYS is now copied on to all floppy boot disks in order to support DOS 3.3. It is not needed on DOS 3.2 disks but NETGEN does not presently know the dos version for every station.

3)   Other Changes:-

. AEMM.SYS is optionally loaded on IBM-compatible stations. The question relating to this in the workstation definition is:-
          'Expanded memory manager Yes/No' (default No).
      The invocation used is:-
          device=AEMM.SYS /p:,4 /r
      ETHERNET.SYS (if appropriate) gets first go at above memory. AEMM.SYS is the next to be invoked. The parameters used means that it reserves 4 pages of expanded memory starting at an appropriate point (EGA card etc.) and the rest is reserved for AMLOAD.

. VGA support has been added for workstations and applications. For workstations, the VGA option has been added into the workstation definition screen and into the data file WKSTAT.DAT for use by LOGON. The same int EC   drivers are loaded for VGA as for EGA. For applications. the VGA option has again been added into the definition screen. At a directory level, the new directory created for VGA-specific applications is \APPLIC\IBMVGA.

. INTECTXT.SYS is now loaded when NETGEN itself loads on an IBM-type station (and is unloaded as appropriate). This means that int EC text drivers no longer need to be loaded in CONFIG.SYS to run netgen and also that the file INTECTXT.SYS now needs to exist in the \NETWKMGR directory.

. Because of the above, NETGEN no longer loads int EC drivers whether text or graphics on ANY workstation. This saves about 20K+ of memory.

. Leading spaces are now strippped in all NETGEN text input fields so solving problems when application names (for example) of <SPACE>LOTUS were entered.

. Each users WIN.INI file is no longer overwritten when a disk production is done on a server providing that the users scratch area resides on MAIN0.The fix for scratch areas residing on other servers will wait for the next release.

. Bug fix for where the users scratch drive server was incorrect in the <username>.CON file when a mixture of server drives was being used for a large number of users.

Changes since Release Version VR1.5.5

3.2.3.16 NEXTDISK.EXE Program Specification

NEXTDISK increments the current drive by one alphabetic character if there is a valid drive available, for use in batch files.

There are no command line switches.

3.2.3.17 OMNINET2.SYS Program Release History

Changes since Release Version VR1.5.5

. the default number of wait states used for DMA is now 2 as this is required by 80386 machines. This can be altered by the /X parameter.

. Omninet2.sys now correctly determines whether it is the first driver being installed in an IBM AT compatible computer in which ROM starts at F000h (e.g. Compaq). This fixes a problem of poor performance in these machines.

. start up banner now says OMNINET II, to differentiate it from the Omninet I drivers

OMNINET2.SYS Latest Version VR3.0.0

3.2.3.18 PCSHARE.EXE Program Specification

PCSHARE is a windows based network administration utility for the PC/SHARE product. It is designed to run under MS-Windows v2.03 or greater.

Typing PCSHARE at the DOS command line will cause it to search for and (if successful) load up Windows.

The format is that of a stacked set of cards, one for each of the users of the PCShare network.

The only person who can log onto a newly configured network is the Network Manager, and when he does so this program is automatically run showing only his card.

The Network Manager may add other users by selecting the "User" pull-down menu (or typing Ctrl-A). He is asked to enter the name and default operating environment for the user (ie Windows can be loaded when the user logs on). He also has the option of redirecting the user's serial and parallel ports to those of the server. If this is not done, however, the default is that LPT1 and LPT2 are assigned to the server's parallel and serial port respectively for each user. When an addition has been made the server must be stopped and restarted before the new user's shares are acknowledged.

Changes to the user's setup are made by selecting the Change option from the User menu, or typing CTRL-C. Users can be removed from the system by the Delete option (Ctrl-D). In each of these cases there are buttons to allow stepping through the list of users (ie moving forwards or backwards through the cardfile).

There is a comprehensive set of help boxes while using these options.

If the user is expanding his PCShare network (it comes configured for eight workstations) he will need to create new softdisks for them to boot from. This is done via the "Set Nr Stations" item on the "File" pull-down menu. The number of softdisks can also be reduced by this option, so he should beware that he is not deleting remote boot disks for stations that do exist.

Note that the "Set Nr Stations" function does not alter the number of connections set up in XPORT and REDIR. These are pre-set for 16 stations, and thus if the number is increased beyond twelve the NETSTART.BAT file must be manually edited. PC/Share is a product for small networks and is not designed to support more than twelve stations.

3.2.3.19 QUAD Program Specification

Installation of Quad Serial Cards.

The Quad Serial driver now has intelligence to find any cards installed on a system, so card 1 does not have to be installed first. This is to avoid interrupt clashes with other device drivers such as SCSI and Omninet. The port addresses though have had to be hard linked to which interrupt the card is on and they are paired as follows.

Card	Switches (1,2)	IRQ
1	on off	11
2	off off	15
3	on on	10
4	off on	12

This is as specified in the PX Adapter installation guide. To avoid interrupt clashes the following rules should be observed :-

1) Board 1 should not be used if SCSI card is installed.
2) Board 2 should not be used if a Gateway Omninet card is present in a PX Adapter.
3) Board 3 should not be used if an Omninet card is present in a PX Adapter.
4) Board 4 should not be used if MK2 Modem is present in a PX Adapter.

This device driver will recognise 4 quad cards and name the serial devices:

COM3	to COM6 on the first card.
COM7	to COM10 on the second card.
COM11	to COM14 on the third card.
COM15	to COM18 on the fourth card.

All channels are set for 9600 baud by default, but the baud may be set up with the command line in CONFIG.SYS, e.g.

DEVICE=QUAD.SYS [/COM<n>:<baud>] ... [/COM<n>:<baud>]

where:
<n> is the channel no (can be * to specify all ports).
<baud> is baud rate.

QUAD.SYS Release History

Changes since Release Version VR3.20.0

. The driver now provides all 4 COM ports under MS-DOS 3.30. Previosly only the first port COM1: was provided due to changes in MS-DOS device driver loading procedure.

QUAD.SYS Latest Version VR 3.20.1

3.2.3.20 SERVER.EXE Program Release History

Changes since original Microsoft Release Version

. Server no longer reqiures PSPRINT to be loaded to perform spooling. This also means that printing will halt when stop is typed at the server.

. Spooling can now be achieved to more than one device simultaneously and is activated via a command line switch-

>   /NP:<no of printers>

. The banner prefixed to printouts now contains the name of the user who originated the printout.

. The PRINTQ is saved when stop is typed at the server and the queue will now be resumed at restart (and not randomly ignored as before).

. More runtime commands have been added to server:-

The 'FILES', 'SHARE' and 'STATUS' commands may now be prefixed by 'USER' this causes the command specified to list user names rather than work station names. The 'USER' command may also be used to find out who is logged on at a particular station, eg:-

>   USER WKSTAT10

. All printer commands now accept a suffix of <device> to address the command to a specific printer, eg:-

>   PRINT OFF LPT1
>   SEPERATOR OFF AUX

Where <device> is omitted, then all printers are affected by the command, this means that the syntax need not change for servers only using one printer.

. Server restricts the number of sessions available when running on a MF20-4.

Changes since Release Version VR1.5.4

. Server now restricts its buffer size when specified on the command line. This is required for use in conjunction with the gateway application.

Changes since Release Version VR1.5.5

. Server now clears down printer errors. This allows printers to be switched off line without halting printing for until server is restarted.

Changes since Release Version VR1.5.6

. a bug was fixed which caused peculiar behaviour when there was heavy server usage including printing. If a spool file was opened with a handle of more than 20 then a memory corruption would occur with unpredictable results. This problem has been known to cause crashing of the server, and the failure to output carriage returns to the server screen.

. a second bug was fixed which caused a hangup error when a workstation session was terminated abnormally (e.g. by switching off).

SERVER.EXE Latest Version VR3.0.0

3.2.3.21 SERVER.SYS Product specification

The device driver SERVER.SYS will be introduced with the release of MS-DOS 3.30. It is a direct replacement for the special server version of IO.SYS that was supplied with the MS-DOS 3.20 VX-Net release2 (1D and 1C).

The device driver performs the following functions:-

. Provides MS-DOS and applications with up to 320K of extra memory.

. Page maps MDA,EGA and VGA display adapters.

. Handles floppy disk DMA to avoid DMAing to/from mapped memory.

SERVER.SYS is loaded by including the following line in the CONFIG.SYS file:-

    DEVICE=SERVER.SYS [/M:pppp]

Switches:

    /M:pppp   paragraph of desired top of memory

Memory maps

          Standard   With SERVER.SYS

```
 ┌────────────┐                       ┌────────────┐
 │    ROM     │                       │    ROM     │
 ├────────────┤─ ─F000─ ─ ─ ─ ─ ─ ─ ─ ├────────────┤
 │  ROM/RAM   │                       │            │
 │    I/O     │                       │            │
 ├────────────┤─ ─C000─ ─ ─ ─ ─ ─ ─ ─ │    RAM     │      ┌───────┐
 │   VIDEO    │                       │            │ ─┐   │ VIDEO │
 ├────────────┤─ ─A000─ ─ ─ ─ ─ ─ ─ ─ │            │  ┘   └───────┘
 │    RAM     │                       │            │
 │            │                       │            │
 └────────────┘                       └────────────┘
```
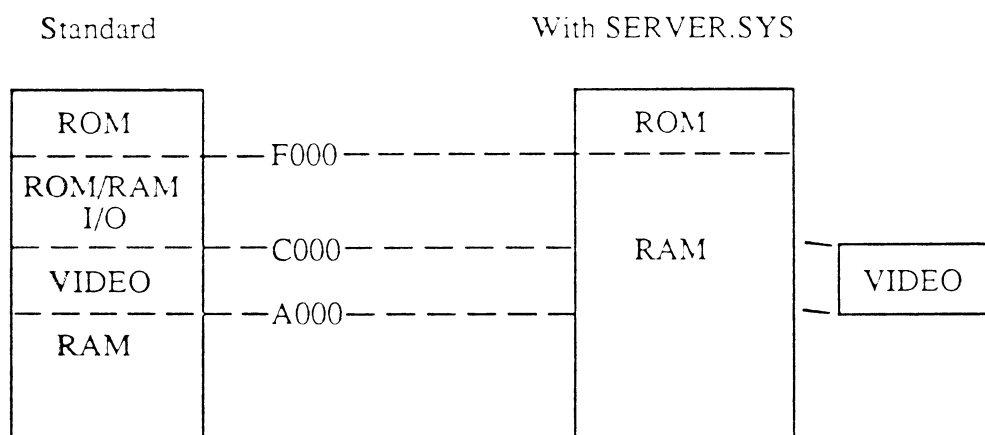
If any expansion cards occupy the ROM/RAM I/O expansion area between C000 and F000 then SERVER.SYS will find these cards and limit the MSDOS memory to below the cards address. The resulting memory map will be:-

With SERVER.SYS

```
                ┌────────────┐
                │            │
                │    ROM     │
                │            │
        E000 ───├────────────┤
                │ Expansion  │
                │   card     │
        D000 ───│            │
        C000 ───├────────────┤ ─┐   ┌───────┐
                │    RAM     │  │   │ VIDEO │
        A000 ───│            │ ─┘   └───────┘
                │            │
                └────────────┘
```
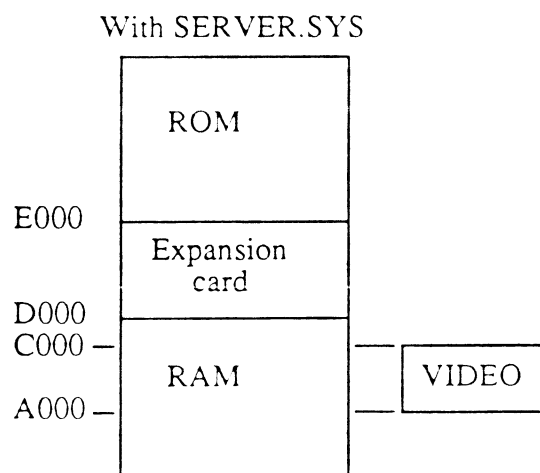
Expansion cards are searched for in the area C000 to EC00 by looking for ROM or RAM on each 1k boundary. Some cards (eg IBM token ring network card) will not be found by this search. These cards are handled by putting the desired top of memory in the SERVER.SYS command line.

3.2-24

NOTES:

The current implementation of SERVER.SYS will only work with MDA, EGA or VGA video cards or if no video card is fitted. Only very basic text mode applications are supported. Any attempt to run an application which directly addresses screen memory will probably cause the machine to crash.

SERVER.SYS will only work on Apricot XEN-i 386 machines. It will refuse to install on any other hardware.

3.2.3.22 XPORT.EXE Program Specification

XPORT.EXE is the transport module for Apricot Omninet networks. XPORT will run on any current Apricot machine and any IBM or lookalike provided the appropriate Omninet.sys is loaded.

Command line switches

Switches supported by XPORT are upwards compatible with those required by the Microsoft Network Transport Layer Interface Version 1.01 specification (October 1984). The following switches are supported:

/NVC   /NVCS   /NBUF   /NCMD   /SNETN
/NETN   /Q   /WARN   /LOG

These are described in detail below. Every switch except /Q should be followed by a colon or space character, then a number or string defining the value of the switch. XPORT provides sensible defaults for omitted switches. A switch may be given in upper, lower or mixed case.

Some of the values so defined can be obtained by an int 5Bh STATUS call. NETBIOS uses this facility to determine the configurations of XPORTs running beneath it.

/NVC   Default 1, maximum 32.

Synonymous with /NVCS. Selects the number of virtual circuits to be supported by XPORT for "user" purposes. One extra vc will be allocated for use by the console manager/console.sys programs, hence the number of virtual circuits displayed by the sign on is one more than the value of the /NVC switch.

/NBUF   Default 10, maximum 74.

Number of internal buffers to be allocated per virtual circuit by XPORT. The extra virtual circuit for conmgr.exe/console.sys is given one buffer of its own, and two buffers are reserved for datagrams.

The standard unit of data transfer used by XPORT, the "standard credit", depends on the number of buffers available for use by each virtual circuit. Asking for more buffers will in general increase the throughput of XPORT during data transfers from the remote to the local machine, at the expense of consuming more memory (each buffer requires about 580 bytes). The value of the local /NBUF switch does not affect the rate of data transfer from the local to the remote machine.

/NCMD   Default 12.

Number of commands to be supported. If a value is given for this switch, it is currently ignored.

/NETN   Default 0.

Defines the network number to be used in the TLNET field of TCBs used to pass commands to XPORT. The same number is used by XPORT to talk to its Omninet.sys, hence the /NETN value must agree with the value supplied by the /D switch on the Omninet.sys command line.

/SNETN   Default 0:0.

Defines the network number and device setup to be used, affecting the TLNET field of TCBs used to pass commands to XPORT and the internal handling of remote address id's. This will allow two omninet networks to share a server BUT this is not the Gateway solution and will not result in one large network.
The first number given must be the logical network number and the second numbers must be the omninet device numbers and must correspond with the values supplied by the /D switch on the Omninet.sys command lines. Both omninets must have the same station id (address) selected on their DIP switches.

/Q   Default = sign on.

If present, disables XPORT sign on including display of version number, configuration and warranty message. However, if XPORT detects an error during its initialisation, it will always display a message. If the error is in the command line parameters, a full sign on will be performed as though the /Q switch had not been given.

/WARN   Default 1.

Defines the level of XPORT runtime errors to be displayed to the screen. See the section on Logging for more details.

/LOG   Default = no logging.

If this switch is present, it must be followed by a drive specification. XPORT will write all log messages to files in the root directory of the specified drive. For instance, /LOG A: causes the log files to be written to the root of drive A. For more details, see the section on Logging To Disk.

Examples:

XPORT /NVC 16 /WARN 3 /LOG A:
Run with sixteen virtual circuits, write all log messages to the screen and also write a disk log in the root of drive A. This might be used on a server.

XPORT /NVC 10 /SNETN 0:0,1
Run with ten virtual circuits, share the node between two network cards with their device numbers selected as 0 and 1 with the logical network selected as 0.
This would probably be used on a server.

XPORT /NVC 2 /Q /WARN 0
Run with two virtual circuits, do not sign on and do not write messages to the screen. This might be used on a station running Windows.

Logging

It is sometimes useful for XPORT to produce messages indicating problems which it has detected, such as failure of internal consistency checks, inability to contact a remote machine or unusual network conditions. Broadly speaking, these errors divide into three categories:

1)   "Fatal" errors which may crash XPORT, cause a virtual circuit to be closed or are in some way unrecoverable.

2)   "System" errors which indicate unusual but potentially recoverable situations, such as a remote machine taking a long time to reply.

3)   "Information" messages about conditions which are totally recoverable, such as the receipt of a duplicate packet, or occur frequently, such as the closure of a virtual circuit on a server.

    XPORT refers to these classes of errors as "Internal", "System" and "User" respectively. The / WARN switch determines which classes of message may be printed. /WARN 0 disables all message printing; /WARN 1 prints only internal messages; /WARN 2 prints internal and system messages; /WARN 3 prints all classes of message.

    A message from XPORT has the general form

Xport <n> : <class> Error - Position <position> Code <code>

where

           <n>   is the network number (/NETN) of the XPORT.
           <class>   is the error class, "Internal", "System" or "User".
           <position>is an indication of where the error occurred.
           <code>   is an integer describing the specific error.

Examples:

Xport 0 : User   Error - Position VBRXERR Code 2
Xport 1 : Internal Error - Position VTTXERR Code 4

<position> is not intended to be of much use to people other than the authors, but roughly the messages and their meanings are

VBTXERR	low level transmit
VBRXERR	low level receive
VTTXERR	virtual circuit transmit
VTRXERR	virtual circuit receive
VTCRED	virtual circuit synchronisation
XTERR	Omninet.sys communication
VUMOD	utilities
VGTMERR	timeouts
VLOGERR	problem with logging

The meaning of <code> can be affected by the <class> of the error, but the approximate meanings are

0	Zero length packet.
1	Bad packet / invalid XPORT packet header.
2	Bad protocol id. Can be caused by running incompatible versions of XPORT.
3	Connection lost. Causes virtual circuit to close.
4	Shortage of internal resources. Should never occur.
5	Zero length message.
6	Shortage of internal resources. Increase /NBUF value.
7	Problem with Omninet.sys interface. Should never occur.
8	Omninet.sys has detected a problem with the LAN and closed down.
9	Omninet.sys busy. Should never occur.
10	Omninet firmware problem / remote LAN card in unusual state.
11	Shortage of internal resources. Should never occur.
12	Virtual circuit synchronisation problem.
13	Data amount mismatch. Should not occur.
14	Sequence number error. Not used at present.
15	Problem with Omninet.sys interface.
16	Problem with Omninet.sys interface.
17	Problem with Omninet.sys interface.
18	Received duplicate packet. Ignorable.
19	Lost packet detected. Usually ignorable.
20	Remote end of virtual circuit not responding. Theoretically recoverable but usually followed by disconnection.
21	Data received on a virtual circuit but not from the station to which the virtual circuit is open.
22	Logging error, e.g. unable to access log file.
23	Internal consistency check failure.
24	Telling remote station to abort a virtual circuit.
25	Received request to abort a virtual circuit.
26	Checksum error. Should not occur.

Logging to disk

The disk logging mechanism uses four files, two current ones and two backups. At XPORT boot

time, if logging is enabled, the current log files from the previous logging run on the same disk are copied to the backup files. The filenames used in Vb1.5.4 are:

```
Current     ..copied to..      Backup

Xlog00.log ———>     Xold00.log
Xplog00.log      ———>     Xpold00.log
```

Within a particular run, Xlog00.log is the most up to date log. When it becomes too large (about 100 entries) it is copied to Xplog00.log and then reopened. Thus the last 200 or so logging messages can be obtained in order by concatenating Xplog00.log and Xlog00.log.

The logging messages written to the files are those which would appear on the screen with /WARN set to 3. XPORT maintains an internal buffer of log messages waiting to be flushed to disk. When the buffer is flushed, the last message from the buffer is followed by a * character. This gives some indication of whether a burst of errors has occurred. Occasionally such a burst will cause the buffer to overflow. If this happens, the message

Log buffer overflowed

is written to the log file, along with as many log messages as can be salvaged from the buffer. Logging then continues as before.

If XPORT finds it cannot write to the log file, it disables any further attempts to log to disk and if /WARN is set appropriately, displays on the screen the error message

Xport n : Internal Error - Position VLOGERR Code 22

i.e. some sort of logging error has occurred.

XPORT.EXE Release History

Changes since Release Version VR1.5.1

. Implementation of lost packet and credit loss recovery.

. Implementation of 'RECEIVE ANY'.

. Implementation of error logging to disk. Off by default and enabled by specifying /LOG [drive:]. See Appendix A for more information.

. Implementation of a switch, /WARN [class], to enable varying classes of XPORT errors to be displayed. See Appendix A for more information.

. Extension to the 'keep alive' code. This is used if the network bus suffers a long 'glitch'. The VC will not be closed until approx 10 seconds have elapsed. If the link is restored during the 10 second period processing will continue as if nothing had happened. If after 10 seconds the link has not been restored then the virtual circuit will be closed resulting in all files associated with that workstation to be closed.

. Implementation of message check summing. The algorithm used is based on the CCITT X.214 recommendation.

. Protocol_id incremented as this XPORT can no longer coexist with previous versions.

. Loop-back has been implemented so that an INT 5Ch process can communicate with another INT 5Ch process in the same system.

Changes since Release Version VR1.5.3

. Implementation of device resolution by using the remote address field to contain the device id. Since the device id maps onto the *logical* omninet device number this means that the host machine can contain two omninet cards attached to two different networks.

. Implementation of a switch, /SNETN, to enable the shared network node to be configured.

. Implementation of a switch, /NETN, to enable the logical network number to be set, this and / SNETN are mutually exclusive and /SNETN has precedence. This was implemented in VR1.5.3.

Changes since Release Version VR1.5.4

. User buffer no longer written to during receive processing. This fixes one known problem with new REDIR and IBM redirectors, and fixes another potential problem with zero length receives causing memory corruptions.

. Stack size increased.

XPORT.EXE   Latest Version VR3.0.0

3.2.4 Network Applications

3.2.4.1 Lotus 1-2-3 on XEN Workstation

It is not possible to use the soft disk copy protection feature on XEN multi-user systems without a floppy disk being present. Therefore Lotus 1-2-3 v1a cannot be run on a XEN Workstation. Version 2 is not available for Apricot-architecture machines.

Version 2, which is available for XEN-i type machines, has a different installation mechanism, so Lotus can be run on a XEN-i diskless workstation, but not on a XEN diskless workstation.

The general rule for whether the soft disk copy protection feature can be run is that if the application can be installed onto a hard disk so that it is not necessary for a floppy diskette to be present, then the soft disk copy protection feature can be used.

3.2.4.2 Omnis Quartz multi-user performance

Omnis Quartz is now available for operation on VX-NET. The following performance tips should be noted.

1)   Being Windows-based, Quartz is disk intensive, and unacceptable response times can occur if all the disk traffic has to be redirected over the LAN.

2)   Especially for diskless systems, the addition of a RAM disk will improve performance significantly. At least 1Mb of RAM disk is required for such improvement to occur.

3)   The following files will improve performance if placed in the RAM disk:-

        QUARTZ.EXE   This will avoid any PATH difficulties
        QUARTZ.INF
        QTZOVL.EXE
        *.QAP   Vastly speeds screen redrawing etc.

4)   The ENVIRONMENT should be adjusted to force temporary files to RAM disk (assumed here to be drive C:) by means of the following A> prompt commands:-

        SET TEMP=C:\
        SET TMP=C:\
        SET QUARTZ=C:\

        If large scale spooling operations are to be performed, then 1Mb of RAM disk will be insufficient, and the amount installed must be scaled up accordingly.

3.2.4.3 Installing SUPERCALC 4 on Apricot MF and VX Networks

The installation of the Supercalc 4 software on either an Apricot MF (XEN based fileserver) or

VX (XEN-i based fileserver) is the same as they are both provided with the same network utility called NETGEN, this allows easy configuration of the network system. This software allows the Network Manager to add users, applications, data areas and devices to the network and then set permissions for the users to access them.

In brief what is needed is an application area for the Supercalc 4 program files, a data area for the Supercalc 4 log file and users who have permission to access these. **The Activate program needs to be installed from a workstation with a local drive.**

Hardware Requirements

MF or VX fileserver.
IBM compatible workstation with a local floppy drive.

Software Requirements

Supercalc 4 version 1.10.
Supercalc 4 LAN pack (optional).
MF or VX system software.

Configuring the network

The following is a step by step guide to setting up the network in preparation for installing the software.

1. Boot the network and workstations up and on workstation with a local floppy drive "LOGON" as the "manager".

2. When the U:> prompt is displayed change to the R:> drive and enter the sub-directory called "NETWKMGR" i.e. CD NETWKMGR.

3. Load the "NETGEN" program, this will allow the setup of the network configuration.

4. Select the "User" option from the menu either by pressing the first letter or with by moving to the option with the cursor keys and pressing carriage return.

5. Choose the "Add" option and ensure that the form displayed is filled in as below :-

    User name   = up to 8 characters
    Environment   = MSDOS
    User work area - Server = the server address
                   - Drive = the servers hard disk
    Copy protected software = No

    An option is selected when it is displayed in reverse video.

6. When this has been done press carriage return and repeat the process for the other users. When all the users have been added select the "Save" option then the "Quit" option to go back to the main menu.

7. The next stage is to create an application area for the programs. This is done by selecting the "Application" option followed by the "Add" option.

8. Fill the form displayed as below :-

    Application name = up to 6 characters
    Server   = the server address
    Drive   = the servers hard disk
    Password   = leave blank
    Application type = IBM generic

Append required = No

Hi-lighting is done by moving the cursor to the required item and pressing the space bar.

9. When this has been entered press carriage return and then "Save" followed by "Quit".

10. To create the data area, if necessary, for the Supercalc worksheet files select the "Public" option from the main menu, then choose the Supercalc application name. This is done by pressing the "F1" key, moving the cursor to the application, pressing the space bar then "F1" again followed by carriage return.

11. Press carriage return to "Add" a public data area and enter the following :-

Data area name = up to 6 characters
Server   = the server address
Drive   = the servers hard disk
Password   = leave blank

12. Again, press carriage return, then "Save" followed by "Quit" and "Quit" again to return to the main menu.

13. Next assign the application and public data areas to the relevant users. This is done by selecting the "Resource" option.

14. Hi-light the user you wish the assign Supercalc to ("F1" and space bar) then enter the "Application" options.

15. Move the cursor to the Supercalc application name and enter a drive letter, then cursor across to the "Permission" column and hi-light "rwc" (for read, write, create) the press carriage return.

16. Still within the "Resource" options select "Publics" then "Select" the Supercalc application and enter a drive letter for the public data area and give this "RWC" permission.

17. Then press carriage return followed by "Quit". If a printer needs to be assigned to a user select "Printers" the enter the devices as "LPT1" and/or "LPT2" etc. then carriage return.

18. Repeat this for all the user who will have access to the Supercalc program.

19. Now "Save" these settings and "Quit" back to the main menu.

20. Select "Disk" then "Server" then hi-light the server which needs to be up-dated and press carriage return. Once the server has been updated press carriage return followed by the "escape key" to return to the disk menu and "Quit" to the main menu, then "Quit" to leave the "NETGEN" program. Then Logoff the network.

21. Re-boot the server and the workstations and when the "LOGON" prompt appears enter one of the users who have access to the Supercalc program and data areas.

Running the Activate program

This is the stage where it is necessary to have a workstation with a local floppy drive for a successful installation.

1. Put the Supercalc 4 Utilities disk in the floppy drive (A: or B:) and change to that drive.

2. Run the Activate program, if drive B:> is being used select the "Drive" option and enter

the new drive letter.

3.   Select "Install" and enter the drive to put the Supercalc program files on. Then enter the read access and write access for the log file as below :-

\\mainONocation

Where location is the name given to the Application area in NETGEN with "xi" added at the end i.e. sc4xi if the Application area was called sc4 in NETGEN.

4.   The next prompt is for the insertion of the program disk in the floppy drive, do this and the programs are copied unto the server at the location specified in section 3. If 5¼" disks are used then there are two program disks.

5.   The program then asks for Program Disk 1 to "Pledge" the software, once this is done the software has been installed to allow access by one user at a time. Additional users may be added by using additional copies of the Supercalc 4 software and "Pledging" the program disks or by "Pledging" a Supercalc 4 LAN Pack.

6.   Once the Supercalc software has been "Pledged" it is ready for use. It can be run from the users U:> drive and the data can be saved and loaded from the public data area created by NETGEN to allow shared access or locally.

If the software needs to be removed from the network it is a simple case of following steps 1 to 3 and selecting the "Release" option from the Activate menu and inserting the relevant program disks.

Obviously the server address, drives, application and data areas names may change depending on the number of servers on a network and the number of drives in a server but this guide should cover most cases.

3.2.4.4 Windows 2/386 on a Network

Microsoft Windows 2/386 can be made to hang when files are opened and/or closed across a network as the Apricot Trackerball Mouse is moved at the same time. This is due to a problem in APMOUSE.DRV version Vc 2.00.1 not handling interrupts correctly. This situation can be overcome by rebuilding Windows (using SETUP) with the version of APMOUSE.DRV Vb 2.00.2. This file can be found on disk 1 of 4 of the Windows 386 disk set in the Qi Environment Pack.

3.2.5 Languages

3.2.5.1 MS Basic version 6.0

New version now has network support

See Section 2.4.3

3.3 Network problem solving

The symptoms of "hanging workstations" or NET805 have a number of different causes. They are only indicative of the problem not the problem itself. It is necessary to investigate the cause of the problem in order to alleviate the symptoms.

Experience has shown that the most common reasons for NET805's and "hanging" workstations are faulty cabling; interference either mains or radio interference; variable power supply; LAN card problems etc. These problems may not be obvious and time must be spent looking for trends. The network hardware and software must be the latest revision and the cabling including repeaters must be thoroughly checked by a qualified network installer.

If network problems cannot be resolved contact the Network & Comms Division Technical Support Hotline with FULL details. To ensure that all aspects have been covered the following set of questions should be used as a minimum guideline. Any additional information should also be provided.

The majority of customers maintain a problem log but this is frequently not detailed enough to establish any trends. Following the Network Site Details report format is an example of the type of log the customer should keep.

Details of the network signal and how to use NETSTAT are in Technical bulletins 13 & 14.

NETWORK SITE DETAILS

1)   Site Details

Customer Name: _____

Address: _____

_____

_____

Tel. No. _____

Contact name: _____

Date first reported: _____

Name: _____

2)   Hardware

Server Type: MF   VX   Point32   ROM Rev: Latest? Yes

Disk type:

RAM Available

Workstation Type	Quantity	w/s no.	ROM Rev	Latest? Yes

3)   Cabling

Belden 8205 Yes/no?   Cable Length: Metres

Spurs: Minimum Length =   Maximum length =   No. of tap boxes:

Repeater Y/N: Quantity   Type:

Impedance with terminating resistors =   Ohms

Tested by: _____

NETSTAT: 0 retries (Omninet1)   SYNTAX :- NETSTAT /r=0
                   2 retries (Omninet2)   SYNTAX :- NETSTAT /r=2

Run with all other workstations disconnected, for each workstation in turn.

Workstation No.	No. of test cycles	No. of retries

Run with all other workstations connected and powered on, for each workstation in turn.

Workstation No.	No. of test cycles	No. of retries

4)   Power Supply

Is an Uninterrupted power supply installed?

Are all parts of the site on the same supply?

Does it have a common earth?

Has any interference been observed, either background or spikes?

Tested by: _____

Voltage level tested by: _____

Is the voltage level within specification?

5)   Network Plan

6)   System Software

What version of the LAN PACK is installed?   Latest Y/N?

Have any updates been made?

Details: _____
        _____
        _____

IO.SYS version: MSDOS.SYS version:

7) Application Software

Software type	Version	MU/SU	Source Language

Note:

All software and hardware MUST be at the latest revision. It is impossible to support a mixture of hardware and software releases, the possible combinations are endless.

FAULT LOG:

Date: _____   Time: _____

Workstation number: _____

Activity at the time of the crash?

Symptoms including error messages?

Which other workstations were on the network?

What were they doing?

Did they also crash?

What were the symptoms including error messages ?

Did NETSTAT recognise all the active LAN cards when run immediately after the crash?

Could new workstations logon?

What recovery action was taken?

Dealer notified? Y/N

3.4 Xenix

3.4.1 Configuring Apricot T30 and T60 Terminals

The correct configuring of Apricot T30 and T60 screens is essential for normal usage under a variety of applications packages.

This bulletin is intended to help in setting up these terminals, although some applications may require variations on the settings specified here.

Where settings are only relevant to a user's personal preference, the entry **USER CHOICE** denotes this.

3.4.1.1 The Apricot T30

Enter **SETUP** by pressing the **SHIFT** and **SETUP** keys simultaneously. The first field to be highlighted is the **HANDSHAKE** setting - to move from one field to another, use the arrow keys.

To configure the terminal, press **ESC** to set it to defaults, then use the following settings:-

HANDSHAKE:**XON/XOFF** SCREEN:**DARK** CURSOR:**USER CHOICE**
BLINK:**USER CHOICE** MODE:**FDX**
DATA BITS:**8** STOP BITS:**1** PARITY:**NONE**
BAUDRATE:**SEE SECTION 3.4.1.3** KEYS:**UK**
BLKEND:**USER CHOICE** AUTO NL:**ON** CR:**CR** AUTO SCRL:**ON** LOCK:**REV**
REPEAT:**ON**
CRT SAVER:**USER CHOICE** PROTECT:**NORMAL** ATTRIBUTE:**LINE**
COMPATIBLE MODE:**WY30** ENHANCE:**OFF** KEYPAD:**NUMERIC**
FKEYS:**REMOTE**
TEST:**OFF**

The programmable keys in the seventh setup level will have been set to their defaults when you pressed **ESC**. These should only be modified if you have a particular reason to do so - for instance, to match key sequences required by a particular application.

When your selections are complete, press the **SHIFT** and **SETUP** keys simultaneously - this will take you to the top menu - key **Y** to save your settings. Your settings will now be the defaults used when the terminal is powered up.

3.4.1.2 The Apricot T60

Power up the terminal whilst depressing the **SELECT** key. Enter **SETUP** by pressing the **SHIFT** and **SELECT** keys simultaneously. Use the yellow right arrow key to move along to the **DEFAULT ALL** option, then press the **F10** function key to set defaults.

Having followed the above procedure, enter each setup screen as follows:-

3.4.1.2.1 T60 - Display Screen

Press **F1** to enter the **DISP** screen, and set the following values:-

COLUMNS=80	STATUS LINE=**STANDARD**	BACKGROUND=**DARK**
LINES=**user choice**	SCRL SPEED=**JUMP**	SCRN SAVER=**USER CHOICE**
PAGE LENGTH=**1*LINES**	CURSOR=**USER CHOICE**	DISPLAY CURSOR=**ON**
ATTRIBUTE=**CHAR**	ANSWERBACKMODE=**OFF**	ANSWERBACK CONCEAL=**OFF**

LINES is application dependant and will vary between 24 and 25

3.4.1.2.2 GENERAL

Press **F2** to enter the **GENERL** screen, and set the following values:-

PERSONALITY=**WY60**	ENHANCE=**ON**	FONT LOAD=**ON**
COMM MODE=**FULL DUPLEX**	END OF LINE WRAP=**ON**	SEND ACK=**OFF**
DATA/PRINTER=**MODEM/AUX**	AUTO SCRL=**ON**	INIT TABS=**ON**
RCVD CR=**CR**	MONITOR=**OFF**	WIDTH CHANGE CLEAR=**OFF**

3.4.1.2.3 KEYBOARD

Press **F3** to enter the **KEYBRD** screen, and set the following values:-

KEYCLICK=**USER CHOICE**	KEYLOCK=**REV**	KEY REPLAT=**ON**
RETURN=**CR**	ENTER=**CR**	CORNER KEY=**HOLD**
XMT LIMIT=**150 CPS**	FKEY XMT LIMIT=**150 CPS**	BREAK=**250MS**
WYSEWORD=**OFF**	LANGUAGE=**UK**	MARGIN BELL=**OFF**

3.4.1.2.4 Communications

Press **F4** to enter the **COMM** screen, and set the following values:-

BAUD RATE=**SEE 3.4.1.3**	DATA/STOP BITS=**8/1**	PARITY=**NONE**
RCV HNDSHAKE=**XON/XOFF**	XMT HNDSHAKE=**XON/XOFF**	XPCHND=**OFF**
AUX BAUD RTE=**SEE 3.4.1.3**	AUX DATA/STOP BITS=**8/1**	AUX PARITY=**NONE**
AUX RCV HNDSHAKE=**XON/XOFF**	AUX XMT HNDSHAKE=**XON/XOFF**	

3.4.1.2.5 Miscellaneous

Press **F5** to enter the MISC screen, and set the following values:-

BLOCK END=**USER CHOICE**	LABELS=**OFF**	WPRT INTENSITY=**USER CHOICE**
AUTO PAGE=**OFF**	SVELABELS=**OFF**	WPRT REVERSE=**USER CHOICE**
TVI955 ATTRIBUTE=**NO SPACE**	PAGE EDIT=**OFF**	WPRT UNDERLINE=**USER CHOICE**
VP60 BLKEND=**NONE**	TEST=**OFF**	

3.4.1.2.6 Other Screens

Entries in the other setup screens should be left at their default values.

3.4.1.2.7 Finishing Setup

Press **F10** to return to the top menu. Use the yellow right arrow key to move along to the **SAVE ALL** option and press **F10** to save settings and return to interactive mode.

3.4.1.3 Baud Rates

The baud rate at which a terminal runs must match the rate set at the system end. The relevant files are:

/etc/gettydefs   **/etc/ttys**   */etc/ttytype*

These files are well documented in Xenix manuals. In brief, the second character for each entry in the **ttys** file cross references the appropriate entry in the **gettydefs** file, which itself defines the line settings. For most purposes, the relevant settings are:-

Apricot Xenix	SCO Xenix	
H or **T**	**o**	Turbo Login, giving a 38.4k baud rate (Chase cards only)
G or **F**	**n**	Fast Login, " " 19.2k " "
E	**m**	Login, " " 9.6k " "

All the above set the line to 8 data bits and 1 stop bit with no parity - this is important, since many Xenix applications will only function correctly with these settings.

N.B. Some applications use the inappropriate MS-DOS keystrokes - these include **Ctl Q** and **Ctl S**, which happen to return the same values returned by the **X/ON X/OFF** handshaking characters. If you wish to use one of these applications, you must set the baud rate at a maximum of **9.6k** and the terminal to **NO HANDSHAKING**.

If a printer is to be attached to the auxiliary port of a **T60** terminal, it must support **XON/ XOFF** protocol, and this must be reflected in the line, terminal and printer settings. It is not recommended to attach a printer to the auxiliary port of a **T30**.

3.4.2 Parallel Printers and System Performance

The parallel printer port on IBM compatible machines generates a processor interrupt for every character sent to the printer. If a fast printer, or one which has extensive buffering is used, there can be degradation of total system performance. This is because the processor spends too much time servicing I/O interrupt requests, rather than executing user programs.

The solution to this problem is to specify the serial port option for those printers which are likely to be heavily utilised and which may cause this problem to occur.

Light, occasional and slow printers may be used on the parallel printer port without adversely affecting system performance.

3.4.3 Apricot Quad Card Configuration   Revision 6

Hardware Configuration

This section describes how to set up the quad card and PX adaptor (not Xen 286) used on an Apricot Xenix system. The quad card has two switches, which must be configured in the following way.

Apricot Xenix VR1.7.0 and previous releases

First Card	Switch 1 on	Switch 2 off
Second Card	Switch 1 off	Switch 2 off
Third Card	Switch 1 on	Switch 2 on
Fourth Card	Switch 1 off	Switch 2 on

SCO Xenix and Apricot Xenix VR1.7.1 and later

First Card	Switch 1 on,	Switch 2 on
Second Card	Switch 1 off,	Switch 2 off
Third Card	Switch 1 off,	Switch 2 on

N.B. VX Systems can support up to three cards only.

Apricot PX Adaptor (not used on Xen 286)

Your PX adaptor will come supplied with an extra PAL, PX0A0009VA, for use when using Apricot Quad cards in all Apricot Xen-i and VX Systems. Using the instructions supplied with the PX adaptor you must exchange the PAL fitted in IC9 with the new PAL, PX0A0009VA.

Apricot Xenix VR1.7.0 and earlier

There is a set of either six or nine pins, depending on PX revision, J2 on the left hand side of the board. These select which interrupt the PX adaptor will use. For the Xeni-i and 386 this is:

Using PX with 6 pins on J2

```
              First        Second       Third        Fourth
              Board        Board        Board        Board

            r --- 7      r --- 7      r --- 7      r --- 7
            |     |      |     |      | r-- |      |     |
   1        |  o  |      |  o  |      | | o ||      |  o  |
            | r-- |      |     |      | | | ||      |     |
   2        | | o ||     |  o  |      | | o ||      |  o  |
            | | | ||     |     |      | L__ |      |     |
   3        | | o ||     |  o  |      |  o  |      |  o  |
            | L__ |      |     |      |     |      | r-- |
   4        |  o  |      |  o  |      |  o  |      || o ||
            |     |      |     |      |     |      || | ||
   5        |  o  |      | r-- |      |  o  |      || o ||
            |     |      || o ||      |     |      | L__ |
   6        |  o  |      || o ||      |  o  |      |  o  |
            |     |      | L__ |      |     |      |     |
            L --- J      L --- J      L --- J      L --- J


            Int 11h      Int 15h      Int 10h      Int 12h
```

Apricot Xenix VR1.7.0 and earlier

Using PX with 9 pins on J2

	First Board	Second Board	Third Board	Fourth Board
1	o	o	o	o
2	o	o	o	o
3	o	o	o	o
4	o	o	[o]	o
5	[o]	o	[o]	o
6	[o]	o	o	o
7	o	o	o	[o]
8	o	[o]	o	[o]
9	o	[o]	o	o
	Int 11h	Int 15h	Int 10h	Int 12h
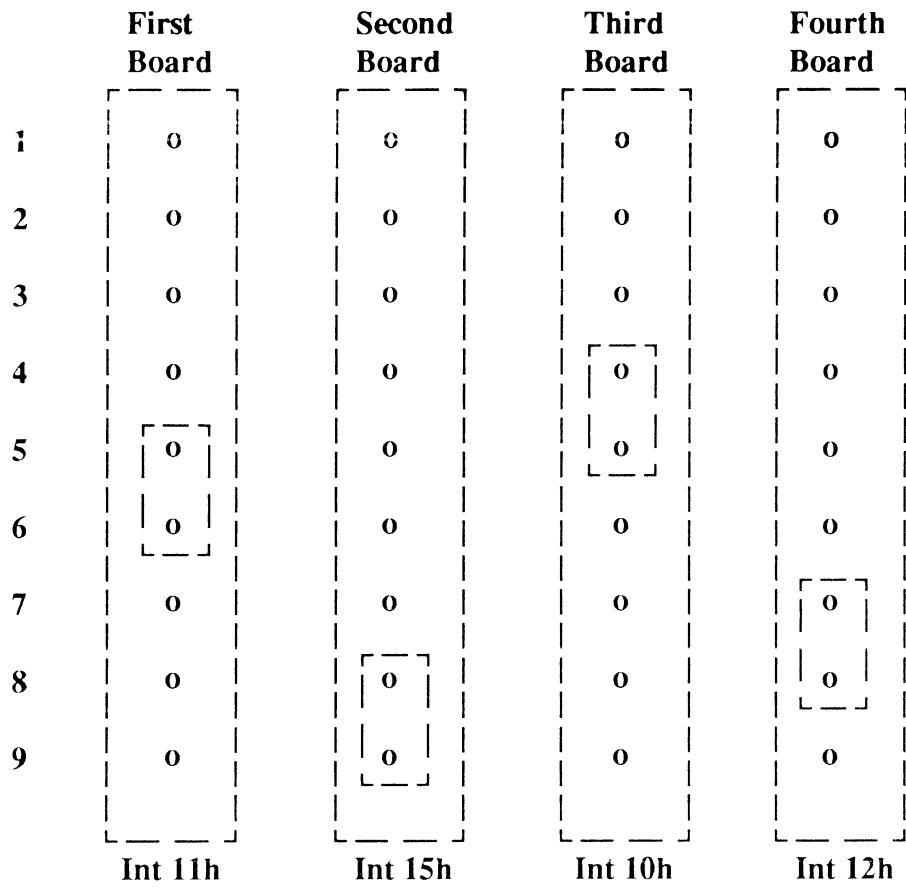
Interrupt Handling SCO Xenix and Apricot Xenix VR1.7.1 and later

Using PX with 6 pins on J2

	First Board	Second Board	Third Board
1	o	o	o
2	o	o	o
3	o	o	o
4	o	o	o
5	o	o	o
6	o	o	o
	Int 10h	Int 15h	Int 12h

SCO Xenix and Apricot Xenix VR1.7.1 and later

Using **PX** with 9 pins on J2

	First Board	Second Board	Third Board
1	o	o	o
2	o	o	o
3	o	o	o
4	[o]	o	o
5	[o]	o	o
6	o	o	o
7	o	o	[o]
8	o	[o]	[o]
9	o	[o]	o
	Int 10h	Int 15h	Int 12h
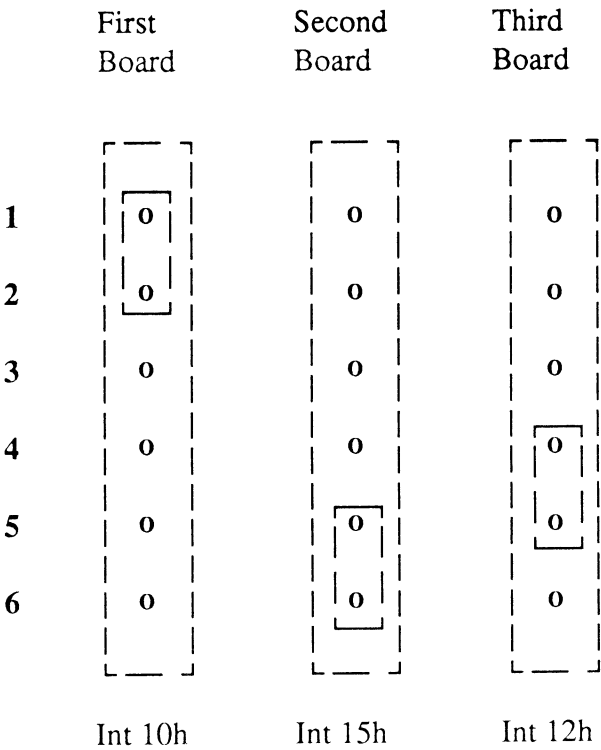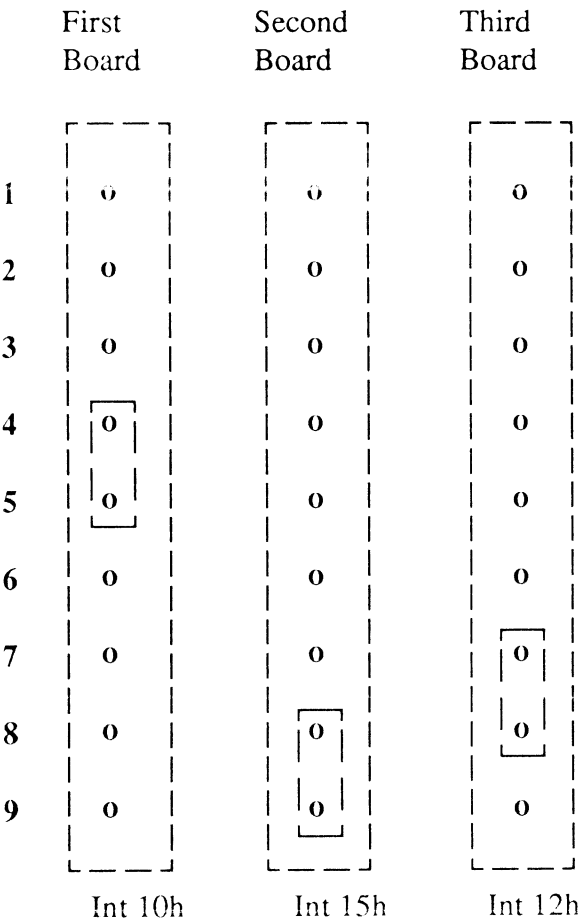
Memory Mapping Xen-i 286/386 and VX System

The PX adaptor has two sets of jumpers, J1 and J2. There are two sets of three in the top right hand corner of the board, J1. These select memory mapping and should be set to "disabled", ie the jumpers should connect the bottom two of each set of three, ie 1 and 2, and 4 and 5.

Notes on 286 Xenix Release VR 1.7.1

In release 1.7.1 of Xenix, quad cards are searched for in order - if quad card 1 is missing, for example, the remaining cards will be re-ordered, so that quad card 2 will become card 1, starting at tty02.

When 1.7.1 is installed on existing Xen-i multiple quad card sites, the cards will be re-ordered as shown above - for example, the terminal previously on tty02 may report as tty06. To avoid confusion, all that needs to be done to return the system to normality is to swap the spider cables over at the rear of the machine.

Notes on Xenix 386

In Apricot Xenix 386, the numbering of the Quad card serial ports has changed - the first port on the first card is now - tty60, the second port is - tty61 etc.

Notes on SCO Xenix

In SCO Xenix the numbering of the Quad card serial port has changed yet again - the first port on the first card is now - tty6a, the second is - tty6b etc.

3.4.4 Apricot Chase AT4, AT8 and AT16 Serial I/O Controllers

The correct installation and use of the Apricot Chase AT Serial I/O Controller cards running on Apricot Xen-i Personal Computers and VX Systems is well documented in the User Guide distributed with the cards.

The following general points apply to the current firmware release (3.03):-

3.4.4.1 Terminal Lockout

Chase firmware release 3.02 holds pin 5 (DTR output from the Chase distribution panel) active low. Consequently, if pin 5 is connected straight through to an Apricot T30 or T60 VDU, the terminal will not function at all. Disconnecting pin 5 will cure this problem.

N.B. If you are using Apricot Xenix 286, it is important to remember that release Va1.7.2 is required to drive Chase AT16 cards.

3.4.4.2 Chase Cards and Modem Usage

The AT8 and AT16 only support those RS232 lines that are used for communications with a terminal. Most modern modems will work with Apricot Chase AT8 and AT16 cards using escape sequences for the additional controls. The standard Chase AT8 and AT16 signals can be modified by changing the minor device number. Some modems require that the DTR signal (CTS output on the Chase AT8 & AT16 cards) is held high all the time a port is open. This can be achieved by setting the top bit of the port minor device number - thus the first modem control port (tty9a) has a minor device number 128, and the second (tty9b) 129. This facility also enables 'sighup', so that if the line is dropped and CTS output from the modem becomes active low, the current user will be 'logged-off' the system. If you wish to use a primitive modem or similar device that requires modem control then you should use the standard serial port provided on the Apricot. The use of the standard 8250 serial port for this purpose should not heavily load the system as modems generally run at much lower baud rates than terminals. Alternatively the Apricot Chase **AT4** card has full modem support.

N.B. There is a 'bug' in the **3.02** Chase firmware, that has the following effects when modem usage is employed (i.e. setting the high order bit of the minor device number):-

> - when booting the system up from scratch, the **login:** prompt does not appear on enabled terminals until the **'break'** key has been depressed.

> - when **SIGHUP** is actioned (after **DTR** has been forced low by the modem), **DTR** output from the Chase card drops, and does not come high again - this means the modem is now disabled until the system is rebooted.

These problems should not occur with 3.03 firmware.

3.4.4.3   DMA Channel 5 Active

If a system containing Chase cards is rebooted without powering the system unit off and back on again, the following message may be reported as the Xenix kernel boots up:-

DMA Channel 5 active, card not installed

This error is caused because the Chase card has not been fully reset. The only answer to this problem is to shut the system down again, and to cycle power on the system unit.

This problem should not occur with Apricot Xenix VR2.2.3.1 or in SCO Xenix provided that 3.03 firmware is fitted in any Chase card. This is because a new utility "atshut"is provided which is called from the 'shutdown' script. This has the effect of resetting any Chase cards.

3.4.4.4   UPGRADING TO XENIX 386

If you have multiple Chase AT8 cards, it is important to make sure you upgrade from version 1 firmware before installing Xenix 386. When you upgrade a Chase card from 1.04 firmware to 3.02 or 3.03, it is necessary to remove links **LK4** and **LK5** from the card, and also to disconnect pin 0 on the three wire master/slave connector cable. If pin 5 on your terminal interface cable is connected at each end, you should also disconnect this (refer to 3.4.4.1 above).

3.4.5 FLOPPY DISK VERIFICATION UNDER XENIX

It is most important to understand that formatting floppy disks under Xenix does not imply that the disks so formatted are 'good' ones. Also, utilities such as **tar** which are commonly used for backup do not carry out any verification whatsoever, of the backup created.

This means that where floppy disks are used for backup, a verification pass **must** be made to ensure that the resulting backups may be restored. If backups are not verified, Apricot can take no responsibility if customers find they cannot restore their data after a system rebuild.

The following are examples of using verification that imply using 3.5" high density diskettes:-

Format with verify:-

#format /dev/rfd0hd
#dd if=/dev/rfd0hd of=/dev/null bs=18k count=80

The **dd** statement in the above, reads right through the floppy disk and throws away the output. If any part of the disk is unreadable, an error message will be generated.

N.B. in SCO Xenix 2.3, format will auto verify if VERIFY=Y is set in the file /etc/default/format

Tar with verify:-

#tar cvkfe 1440 /dev/rfd0hd ./*
#tar tvf /dev/rfd0hd

The second **tar** statement will read through the backup disk and will either list all the files on it, or produce an error message such as:-

tar: directory checksum error

If any error messages are generated, then the backup is no good.

N.B. It is important to verify with 'tar tvf' rather than with 'tar tvnf', since the 'n' option causes intervening data between file headers to skipped - thus only the file headers would be verified.

3.4.6 Using Serial Printers Under Xenix

To use serial printers successfully under Xenix, requires that getty is not running on the port concerned (i.e. it is disabled), and that the printer supports **X/ON X/OFF** protocol. To ensure that correct protocols are maintained on the host machine, a utility called **sleepport** has been provided - this is available with Xenix 386 and with Xenix 286 VR1.7.1 and later but not with SCO Xenix (SCO Xenix as distributed by Apricot works correctly for spooled printouts and does not require sleepport.)

syntax - sleepport device [speed] [-e]

sleepport is required to maintain valid line disciplines on serial ports to which printers are attached. This applies whether the printers are driven via the Xenix Spooler (lp), the Apricot Spooler (MAP & Office), or directly by an application. Failure to use **sleepport** will result in the loss of data or worse. **sleepport** opens the specified serial line, sets line attributes and then sleeps indefinitely with the line open. The default settings are :-

> 9600 Baud, 8 bit word size, no parity, 1 stop bit, x/on x/off (DC1, DC3) protocol. Carriage return to new line mapping is enabled (ONLCR), as is automatic tab expansion (TAB3).

The default baud rate and parity settings may be overridden by the following options:

> **[speed]** - specifies the transmission speed. 9600 baud is the default value - other speeds available are - 300, 600, 1200, 4800 and 9600 baud.

> **[-e]** - if this flag is specified, the line is set to 7 data bits, with even parity.

> **Examples** - a sample command line might be:

>> sleepport /dev/tty82 1200 -e

> - where, tty82 will be set to 1200 baud, with even parity. Such entries may be placed at the end of the file - /etc/rc so that printer lines are automatically set correctly on entering multi-user mode, e.g. :

>> #Sleep serial printers on-line and set attributes
>> sleepport /dev/tty02   #9600 baud & no parity
>> sleepport /dev/tty81 1200 #1200 baud & no parity

>> **N.B.** quad cards do not support parity settings.

3.4.6.1   SPECIAL NOTES CONCERNING THE WRITER 14

If you wish to use an Apricot Writer 14 on a serial port, as well as running **sleepport**, you need to undertake the following steps:-

Add the following lines to the end of the file - **/etc/rc** :-

/usr/bin/sleepport /dev/ttyXX
/bin/stty istrip < /dev/ttyXX &

- where 'XX' is the serial line concerned. The istrip entry will strip the high order bit off any bytes received from the printer - this is necessary for the **X/ON X/OFF** protocol to be recognised.

You will also have to wire the serial interface cable as follows:-

```
      HOST              WRITER 14
       2———————————————————2
       3———————————————————3
       7———————————————————7
                          4-5-6
      20-8
```

Set up the printer switches for **X/ON X/OFF** as documented in your manual. Also, make sure that RFS is enabled by connecting the internal link **R30** - refer to section **4.2** in your printer manual.

3.4.6.2   SPECIAL NOTES CONCERNING THE DIABLO 630

Some printers, such as the Diable 630 and compatibles, use the horizontal tab character (09 Hex) in the command set. For such printers, tab expansion must be switched off - add the following lines to the end of the file - **/etc/rc** :-

/usr/bin/sleepport /dev/ttyXX
/bin/stty tab3 < /dev/ttyXX &

- where 'XX' is the serial line concerned. This will ensure
the printer receives control characters correctly.

3.4.6.3   Switching Off Banners Under Xenix

If banners are being printed by **lp**, edit the file **/etc/default/lpd** and set it to the following:-

BANNERS=0

To get rid of extra form feeds when printing via **lp**, it is necessary to edit the file **/usr/spool/lp/interface/PPPPP**,
- where **PPPPP** is the name of the printer as known to the spooler. Find the following lines:-

echo "\014\c"
shift; shift; shift; shift; shift

- remove the first of these lines.

In SCO Xenix remove lines with cho "\f\c" except the one after the line **cat "$file" 2>&1**

echo "\f\c" which occurs towards the end of the interface file

3.4.7 Driving Printers off Apricot T60 Terminals

The use of a T60 for local printing is not normally recommended, since the terminal is disabled from use as a VDU whilst printing is in progress. However, where a remote site is in use via a dial-up or leased line, printing off a T60 can be a useful facility, since it enables local printing without the need for multiplexors.

N.B. Auxiliary terminal printing does **not** function correctly on T30 terminals.

To set up a printer on the auxiliary port of a T60, use the following procedure:-

3.4.7.1 Terminal Setup (Refer also to 3.4.1.2 above)

Enter setup on the T60 and press **F4** to enter the **COMM** screen - make sure that **RCV HNDSHAKE, XMT HNDSHAKE, AUX RCV HNDSHAKE** and **AUX XMT HNDSHAKE** are all set to **X/ON X/OFF** protocol. Also ensure that **AUX DATA/STOP BITS** and **AUX PARITY** are set to the same values as for **DATA/STOP BITS** and **PARITY**. The **AUX BAUD RTE** may be set at a different rate from the main **BAUD RATE**.

3.4.7.2   Printer Setup

The printer must be set up for **X/ON X/OFF** protocol. Most printers may be attached to the auxiliary port via a straight through cable - but check your printer manual for this.

3.4.7.3 Host Systems

It is essential that the line to which the printer/T60 combination is attached, is set to X/ON X/OFF flow control - the standard **gettydefs** entries set this for you. The line should be enabled as for normal stand-alone T60s.

Now run **lpinit(c)** - where the device file is requested. key in the serial device to which the T60 is attached - e.g. **/dev/tty8b**. When **lpinit** has completed, change directory to **/usr/ spool/lp/interface**.

Use **vi** to edit the file for the printer you just created via **lpinit**.

Find the lines that read as follows:

echo "\014\c"
shift; shift; shift; shift; shift

- replace the **\014\c** with **^O^[d#** - this will lock the keyboard and put the terminal into transparent print mode.

Add a new line at the end of the script as follows:-

echo "^T^N"

- this will switch transparent print mode off, and unlock the keyboard.

N.B. to enter control characters in **vi**, go into insert mode and key **CtrlV** followed by the required control character - e.g. **CtrlO**. The **Esc** key will appear as **^[** if you key **CtrlV** followed by **Esc**.

3.4.8 Apricot TRIPLEX Modem - Operation Guide

It is strongly recommended that every Xenix site installed should have a 1200 Baud asynchronous Hayes compatible modem attached for support purposes. For many user problems, this will prevent the need for site visits by either the dealer or Apricot Unix Support, since it would be possible to 'dial-in' to the customer's machine and analyse it remotely.

The following documentation is specifically geared to the Apricot Triplex Modem, but would be generally applicable to any Hayes compatible modem.

3.4.8.1   Installation

Following the instructions set out in chapter 2 of the Apricot Triplex Modem manual, install the modem as one of the COM ports within your Apricot system, remembering to disable the on-board serial port if you set it up as COM1.

3.4.8.2   Operation

Login as root on the console and change directory to /dev by typing:-

    cd /dev

then check that the necessary devices to control the modem exist; to do this type:-

    l cu* tty0[0-3]   (if using Xenix 286) or
    l cu* tty[1-2]a   (if using Xenix 386)

For Xenix 286, this should produce a list something like this:-

    crw-rw-rw- 2 bin   bin   5,128 Nov 2 15:55 /dev/cua0
    crw-rw-rw-   2 bin bin   5,129 Jan 7 10:04 /dev/cua1
    crw-rw-rw- 2 bin   bin   5,128 Nov 2 15:55 /dev/cul0
    crw-rw-rw- 2 bin   bin   5,129 Jan 7 10:04 /dev/cul1
    crw-rw-rw- 1 bin   bin   5, 0 Nov 2 15:55 /dev/tty00
    crw-rw-rw- 1 bin   bin   5, 1 Nov 2 15:55 /dev/tty01
    crw-rw-rw- 1 bin   bin   9, 0 Nov 2 15:55 /dev/tty02
    crw-rw-rw- 1 bin   bin   9, 1 Nov 2 15:55 /dev/tty03

For Xenix 386, this should produce a list something like this:-

    crw-rw-rw- 2 bin   bin   5, 0 Nov 2 15:55 /dev/cua0
    crw-rw-rw- 2 bin   bin   5, 8 Jan 7 10:04 /dev/cua1
    crw-rw-rw- 2 bin   bin   5, 0 Nov 2 15:55 /dev/cul0
    crw-rw-rw- 2 bin   bin   5, 8 Jan 7 10:04 /dev/cul1
    crw-rw-rw- 2 bin   bin   5, 8 Jan 7 10:04 /dev/culd1
    crw-rw-rw- 1 bin   bin   5, 0 Nov 2 15:55 /dev/tty1a
    crw-rw-rw- 1 bin   bin   5, 8 Nov 2 15:55 /dev/tty2a

Assuming that the modem has been installed as COM2 then the required devices are cul1 and cua1. If they are not present or are incorrect then the nodes will have to be created and this can be achieved through the following commands:-

    mknod cua1 c 5 129   (for xenix 286) or
    mknod cua1 c 5 8   (for xenix 386)
    ln cua1 cul1
    chown bin cu*
    chgrp bin cu*

The first command makes a character device with major number 5, minor number 129 (or 8).

Next change to the /etc directory by typing the command:-

cd /etc

It is now necessary to add lines to the /etc/ttys and /etc/ttytype files in order to describe the login characteristics of the modem line. First, take a copy of the file to be edited by typing:-

cp /etc/ttys /etc/ttys.old

then using the editor of your choice, vi for example, edit /etc/ttys. After the line:-

17console

add a line:-

03cul?   - where ? is 0 for COM1, 1 for COM2, etc

finish the edit and save the file back again. Next take a copy of the file /etc/ttytype, type:-

cp /etc/ttytype /etc/ttytype.old

then edit /etc/ttytype and add (assuming it isn't there already):-

ansi cul1

after the line:-

ansi console

Finish the edit by saving the file back again.

The final stage before the modem is ready for use is to edit the devices file - for Xenix 286, this is:-

/usr/lib/uucp/L-devices

and for Xenix 386:-

/usr/lib/uucp/Devices

The devices file is used by the call up program cu(c). So change directory to /usr/lib/uucp by typing:-

cd /usr/lib/uucp

For Xenix 286, edit L-devices and add the following lines, assuming that they are not already there.:-

ACU cul1   cua1 1200
DIR   cul1 0   1200

For Xenix 386, edit Devices and add the following lines:-

ACU cul1   cua1 1200 hayes
Direct cul1 - 1200 direct

Finish the edit and saved the file again.

Dialing Out
Now you can proceed to dial out by issuing the command:-

cu -l cul1 dir   for Xenix 286
cu-l cul1   for Xenix 386

This will come back with the response:-

Connected

You can now issue various commands direct to the modem. For example (the user commands in bold type) :

atz
OK
atd12345678+23t
Connected
Sign-on Message......

would first reset the modem parameters to their default setting and then call up a computer (on 12345678) in V23 mode. To end the session with that computer, logout and then type:-
~.

the modem will respond with:-

Disconnected

and return you to the hash prompt.

Dialling In
To enable a remote login it is necessary to programme the modem to auto-answer and also to enable the particular line to be a login line. The following sequence programs the modem to auto-answer. (The user commands are in bold.)

```
cu -l cull dir     (for Xenix 286)
Connected
atz
Ok
ats0=3
Ok
atq1
ate0
~.
Disconnected
```

You will be returned to the hash prompt - now enable the modem port by keying in:-

enable cull

Check that **getty** is running correctly on the port by keying:-

ps -ef

You should see a line as follows:-

UID PID PPID C   STIME TTY TIME COMMAND
root 51   1 28 09:20:25 cu 0:05 - cull E

Check the connection by dialling in from another modem - the modem should answer after 3 rings, and the **login:** prompt should appear on the remote screen.

3.4.9 AM CARDS AND XENIX 386

Benchmark tests have demonstrated that fitting an AM card to a Xenix 386 system can cause a drop in performance by as much as 50%. Always populate the 386 motherboard with its full 8 megabytes, before even considering the use of an AM card. Only fit an AM card if the amount of disk swapping taking place becomes a problem.

3.4.10 Fixed Disk Errors

This document is intended to assist Apricot Xenix Centres in dealing with hard disk errors reported by customer machines running Apricot Xenix.

Under all circumstances, make sure the site in question has good and <u>verifiable</u> backups of /etc, so the customer's configuration files may be reloaded.

Before commencing operations, ensure that a full Xenix installation set is available on site, in case re-installation becomes necessary.

3.4.10.2 Apricot Xenix 286

Under Apricot Xenix 286, the following procedure must be undertaken:-

2.1   Check for good backups as per 3.4.10

2.2   Factory format the fixed disk, making sure that any fresh disk errors are added to the list of bad tracks reported by the **HDFORM** scan option. In most cases, this procedure will have to be carried out by Apricot Computer Services.

2.3   Re-install Xenix from the customer's set.

2.4   Re-load the customer's database and software, remembering to download /etc

2.5   Check the system is fully operational - it may be necessary to recreate print spool directories in **/usr/spool/lp/request.** If so, create a directory for each printer known to **lp** of the same name as the printer -, these directories **must** be owned by **lp** and be in group **bin**.

2.6   If problems re-occur the hardware should be checked by a maintenance engineer.

3.4.10.3. Apricot Xenix 386 for PC's and SCO Xenix.

There is a utility called **badtrk** which is used during system installation to scan the Xenix partition and map out any defects discovered. **badtrk** may also be used to add additional defects to the flaw map on a fully installed system as follows:-

1.3   Having ensured that the customer has good backups (including /**etc**), shut the system down and reboot into System Maintenance mode (you will need to know the root password for this).

3.2   At the # prompt, enter the command:-
>   **badtrk -f/dev/rhdNa**   (if using a Xen-i)
> or   **badtrk -f/dev/rsdNa**   (if using SCO Xenix on a VX system)

where **N** = the drive number of the affected disk (usually 0)

3.3   Find out the head/ cylinder or sector number of the suspect area - hopefully the customer will have written this down when the error was first reported - if not, **badtrk** has a non-destructive scan option, which can be used to search for the error. If scanning fails to find the suspect area, you will have to leave the site, with instructions for the customer to write down the information should the error reoccur.

3.4   Add the required entries to the current bad track table and exit the program - **badtrk**

will ask you if you wish to salvage any data from the bad areas - reply 'no' to this, since the attempt has unreliable results.

3.5 Run **fsck** on all file systems to insure their integrity, and reboot the system.

3.6 Enter full multi-user mode and restore the customer's database and software from backup

NB Do **not** attempt to run **badtrk** on a VX system installed with Apricot Xenix - the absence of an ST506 disk will cause the system to 'panic' crash.

3.4.10.4 Xenix 386 on a VX System

Mapping out bad tracks on a VX System will only work for Apricot Xenix 386 VR 2.2.3.1 and SCO Xenix. In Apricot SCSI Xenix 286 and Xenix 386 VR 2.2.3.0, a fault in the SCSI driver would give unreliable results if remapping were attempted - in these cases, the only option is to **SFORM** the disk and reload the operating system.

Proceed as follows to remap a bad block:-

4.1 Having ensured that the customer has good backups (including /etc), shut the system down and reboot into System Maintenance mode (you will need to know the root password for this)

4.2 Find out the sector number of the suspect area - hopefully the customer will have written this information down when the error was first reported - if not, try using the following command to determine the bad sector number:-

dd if=/dev/sdNa of=/dev/null

Where **N** is the drive number of the faulty disk.

If this method fails to find the suspect area. you will have to leave the site,with instructions for the customer to write down the information should the error re-occur

4.3 At the # prompt, enter the command:-

scioctl /dev/rsdNa REMAP NNNNN

-where **NNNNN** = the sector number reported by the system.

4.4 Run **fsck** on all file systems to ensure their integrity, and reboot the system.

4.5 Enter the full multi-user mode and restore the customer's database and software from backup.

3.4.10.5 General Points

5.1   Always keep an on-site record of action taken, and sectors re-mapped

5.2   If problems occur regularly, a maintenance engineer should be called to the site to check the hardware.

5.3   **badtrk** and **scioctl** have a finite limit on the number of re-mapped blocks that are allowed. When this limit has been reached, there is no alternative but to factory format the disk and re-install Xenix from scratch.

5.4   Bad sectors cannot be re-mapped if they occur in either the **super block** or the **inode table** in these cases, re installation is the only option. Errors in cylinder 0 are fatal, and require a disk replacement.

5.5   Further information mey be found in the Xenix 286/386 Reference Manual - Part 2, under **badtrk(M)**

5.6   An example of the type of error message reported by the system when a hard disk error is encountered is reproduced below:-

error on dev (0/47), block=12954 cmd=0003 status=0018 sector=12971, cylinder/head=190/3

5.7   **fixperm** may be used to report missing files from the operating system, if you require advice contact Apricot Technical Support.

3.4.11 SCO Xenix and MS-DOS

SCO advise that where a disk is to be partitioned for Xenix and MS-DOS, the MS-DOS partition should always be installed first - failure to do this can cause MS-DOS to overwrite the previously installed Xenix partition.

Booting MS-DOS from the **boot:** prompt will not function correctly unles MS-DOS release 3.30 or later is installed as the DOS partition on your fixed disk.

3.4.12 Release Notes

SCO Xenix is distributed with copious release notes which contain valuable information, particularly regarding swap space allocation and memory requirements.

Please read these.

3.4.13 SCSI Tape Drives and Xenix

SCSI tape drives for 386/50 and 386/100 products.

The SCSI tape driver released with SCO Xenix 386, Release 2.2, has two modes of operation; buffered and non-buffered. In the buffered mode, the streaming tape driver looks at the amount of available memory and dynamically tries to allocate 50% for exclusive use.

Buffered mode of operation is recommended for backup and retrieval of data, since throughput is optimised. However, there are some side effects from using buffered mode operation - these are:-

Buffered mode operation may only be used when logged in as 'root'. For other users, utilities will report that they cannot open the device.

The system does not "know" whether the tape is capable of being written or read until it first accesses the tape drive. The first access to the tape drive does not occur until the system attempts to flush its buffers. A consequence of this is that 'tar' can have transferred all its data to the system buffer and terminated successfully before there has been a single access to the physical tape - if an error occurs at this point, tar will not report it.

The following procedures should be followed to overcome these problems:-

Always login as 'root' on the system console device to backup or restore data using the buffered mode of operation. System error messages are displayed on the system console, so even if 'tar' or 'cpio' fail to report an error, the user will be able to monitor system errors related to tape I/O as they occur.

It is good practice to list the contents of a backup once it is complete. For example, if 'tar' is being used, the following command will list the tape contents:

tar tvf /dev/mt0

If you require to be able to backup from user logins other than 'root', or you desire "normal" error reporting, then use the non-buffered tape operation.

The buffered character device nodes are:

/dev/mt0 — rewinds on close.
/dev/nmt0 - no rewind on close.

The non-buffered character device nodes are:

/dev/rmt0 - rewinds on close.
/dev/rnmt0 - no rewind on close.

N.B. For reliable operation, it is important to ensure that tape drives are regularly cleaned - tape cleaning kits may be ordered from Apricot Computer Maintenance Spares Department.

3.4.14 Apricot Map and SCO Xenix

The Apricot Map custom installation menu incorrectly describes the product as follows:-

ALL   Apricot Map Manager
MAP   Map Manager
MAPMANApricot Map Documentation

The products should correctly be described as follows:-

ALL   Apricot Map and Map Manager
MAP   Apricot Map
MAPMANApricot Map Manager

Apricot Map Manager will **not** function, unless Apricot Map has been installed first.

Before using Apricot Map under SCO Xenix it is necessary to modify the file **/etc/cmos** as
    follows:

    chmod u+s /etc/cmos
    chown root /etc/cmos

3.99   General

3.99.1   Installing Multiuser upgrades - Guidelines

1)   Deleting *.dsk files when updating servers

It is suggested that when performing an upgrade to either a VX or MF system that the *.DSK files should be renamed so that new ones can be produced after the upgrade procedure. This eliminates any problem of *.DSK files that were produced with the old version of software still being on the system after the new release has been installed . Once the upgrade has been successful the old renamed *.dsk files can be removed.

2)   Verifying disks before upgrades

It is advisible that before performing an upgrade that the disks should be checked first. This applies to either the VX or MF. The quickest way to do this is to use the RESTORE command with the /n option. This effectively does a directory of the disks. The command line for this is as follows:-

        RESTORE A:APRICOT d: /N

APRICOT is the archive name given to all Apricot update files and d: is the designated drive letter that RESTORE needs to be given. The /n option prevents it from physically copying to that drive. RESTORE will then prompt for the other disks in the normal way until the complete set has been checked. RESTORE will display FOUND before every filename, if anything else appears on the screen then you have a faulty set of disks.

3)   Verifying tapes before upgrade

It is the responsibility of the customer to verify backups of the system. Should the system require restoration the customer then has a known tested backup. This can be done as follows:-

        a) For the MF

AVERIFY C:<archive filename> A:*.* /n

        b) For the VX

TRESTORE TAPE0:<archive filename> c:*.* /n

The command for either machine will effectively do a directory of the tape and if all the files are found without corruption the backup is valid.

| **Note :**

| The /n parameter for TRESTORE is only available on version VB 3.20.2 or greater.

|

| 4)   Station disk production after upgrading

|

| It is important to note that after an upgrade has been performed all the *.DSK files should
| be updated to include the latest version of software. Problems may occur if files of prior
| releases are used to load the network. This can be done in NETGEN by choosing the disk
| production option for all workstations. This is especially important for stations that boot
| from local floppy disk.

4.2   DOS 3.2 Manual

4.2.1 Packed Format Backups

Section 9, page 15 of the DOS 3.2 Manual states that packed format in backup requires floppy disks to be 1Mb capacity or greater. This is no longer true, and packed format can be used on any size of media Thanks to Admin Computer Services for bringing this to our attention.

4.2.2 Tree Command

Pae 9/127 of the MS-DOS 3.2/3 Manual explains the tree command having a directory_path parameter. This is a fault in the documentation. The tree command can only be specified with the drive specification and the optional /F for listing files.

4.3   Desktop Publishing Technical Bulletin

The Desktop Publishing Division has recently published its own Technical Bulletin. If you are a desktop publishing dealer, it is recommended that this should be filed with your copies of this publication. Subjects covered include Pagemaker 1.0a, new fonts, recommended cables, and hints and tips on getting the best from your system.

4.4   REL6/1A Update Documentation

It is documented in the Release 6 manual that after installing Rel6, a number of files
should be restored. The suggested files are:-

    CONFIG.SYS
    SHARE.DAT
    NETSTART.BAT
    \NETWKMGR\NETADDR
    \NETWKMGR*.DAT
    \NETWKMGR*.CON
    \NETWKMGR*.DSK

The \NETWKMGR\NETADDR file and the *.dsk files should **not** be restored onto the
system. It is safer to recreate new *.dsk files so that they comply with the new release of
software and the same for the NETADDR file. The one copied on with the new release
should be the latest one.

Reserved for future use

4.5 Windows 2 - Windows/386 User Guide

The previous statement regarding a section on page 4.6/5 of the user guide not being true, is now out of date due to AEMM386.SYS Vr4.00.00 and later (the drivers being shipped on XEN-S and Qi dos disks) now conform to LIM4 specifications.

5 Miscellaneous

5.1 Systems Backups

It is always the user's responsibility to ensure that an adequate and up-to-date backup is made. This is particularly important is it is necessary to call out an engineer from Apricot Computer Services as if they have to format the hard disk of either a server or a stand-alone machine, the user's applications and data will be lost unless an adequate backup has been taken.

It is strongly recommended that all Apricot resellers retain a master copy of the operating system and what has always been classed as "In-the-box" software for the equipment that they re-sell.

It is perhaps more important that then equipment is sold to a user that a procedure be expressly described whereby the user can create their own backups.

It is suggested that a user make an immediate backup of the system area and files on the hard disk, and that this be locked away in a safe or other similar storage device before using the equipment for any other purpose. It is then suggested that users mak "grandfather-father-son" backups on a daily/weekly/monthly basis depending on the circumstances.

5.2   Help us to help you

If you have any suggestions for improving the Technical Bulletin, or ideas for articles you would like to see, please let us know. Contact Peter Banks, or any other member of the Technical Support team on 021-456-4040.

The new combined support service is on 021-456-4040. There are several teams, and it will help you to get prompt support if you can specify at the switchboard whether you are an Apricot Business Centre and which of the following teams you need to speak to :-

MS-DOS
Network
Xenix
Applications software

5.4   Questions and Answers

The following section consists of questions which we have recently been asked by dealers and distributors.

Q. Why does my user's XEN-I 286 say that he's only got 640K of memory when it's supposed to be a 1 Mb machine ?

A. Unlike Apricot-architecture, which allowed fuller use of the 1Mb theoretical maximum under MS-DOS, the IBM architecture allows only 640K of user memory. As Apricot now manufactures IBM compatible computers, Apricot computers are subject to the same restrictions. Memory above 640k can be accessed in a variety of ways. See elsewhere in the bulletin for details.

Q. How can my customer tell how much memory he has in his Apricot PC/Xi ?

A. When the machine is switched on or rebooted, the amount of memory is displayed at the bottom of the screen.

Q. We have a client who wants to buy a Xen-i 386/50 (tower) system. can he get MS-DOS for it ?

A. MS-DOS is supplied as standard on all Apricot computers.

Q. If i fit an Xp-i box to a Xen, does it make it IBM-compatible ?

A. No. An Xp-i box cannot be fitted to a Xen, and it does not change the fundamental architecture of the machine.

Q. What are CGA, EGA and VGA, and why do you do so many ?

A. These are all industry-standard graphics adaptors. VGA is the most recent, and also the most flexible and the highest resolution. VGA is the only one currently sold by Apricot.

5.5 Data Conversion

We have received a brochure from a company who claim to be able to convert
data from any media or package to any other. They say they convert anything
from Databases to Typesetting packages, and from Bernoulli disks to Video
Tape. Could be just the thing if you're trying to replace an old Apple
or Sirius ! They give free estimates.
Contact Commercial and General Systems 0582 - 696911/2.

5.6 Large Screen Presentations.

For large screen presentations, we use a company called SAMUELSON. They sell, lease and hire out large screens for presentations such as Barco equipment. Some dealers may find them useful for their presentations.

SAMUELSONS

Birmingham 021 233 2999
London   01 208 0011

Section 6
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